The Longitudinal Effects of Preschool on Rural Iowa Children

by

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Research is never complete until it is used by others. I sincerely hope the study will ultimately benefit children and guide those who make decisions in determining the future course of preschool education in Iowa schools.

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The purpose of the study was to determine whether students who participated in the preschool program for rural, four-year-olds differed significantly from other students of the same age who did not attend any formal early education program. Sixty students were selected for the study; 30 formed the experimental group and 30 formed the control group. The two groups were compared in the number of special education placements, the frequency of grade level retention, and in academic achievement as evaluated by the standardized test scores in reading and math. Results of the present study indicated that there was no significant difference between groups in the measures of achievement in math and reading through sixth grade. However, there were significant differences favoring the control group in the number of special education placements and in the frequency of grade level retention through sixth grade. Specifically, 23 percent of the preschool students were retained by sixth grade; no controls were retained. Of the preschool group, 30 percent were placed in special education; only 7 percent of the controls were placed in special education. The results did not corroborate many of the findings reported in previous studies of disadvantaged, urban populations. The current study raises questions about the effectiveness of preschool programs. Further study is needed to determine whether the critical aspects in present models can replicate the quality preschool education that produced positive results.

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Chapter 1

INTRODUCTION

There has been a difference of opinion concerning the value of preschool education for young children since Frederick Froebel instituted the first "kindergartens" in Germany in the early 19th century. Many other pioneers in early childhood education--Schurz, Peabody, Blow, and Montesorri--made significant contributions to the lives of children amid continuing controversy. Working with low-income parents and their young children, the Head Start Program of the 1960s began as a comprehensive early intervention program to alter the early academic failure of disadvantaged children. Since the legislation was adopted, Head Start has been the center of a national educational debate on early intervention programs. Can early childhood education programs change the inevitable course of children in poverty toward academic failure? "The debate over early intervention is not, and indeed may never be over... (The) findings should continue to be studied and new data accumulated...." (Brown, 1985, p. 13).

The Perry Preschool Project in Ypsilanti, Michigan, has provided educators a longitudinal report of the effects of an early intervention program aimed specifically at the impoverished population (Berrueta-Clement, Schweinhart, Barnett, Epstein, & Weikart, 1984). The authors conducted extensive research on 123 preschoolers with low IQ scores from an economically depressed community. The purpose of the study was to explore

the long-term effects of participation in a high quality early childhood program. From a common neighborhood in Ypsilanti, Michigan, the three and four-year-olds were randomly divided into experimental and control groups, with the former group attending one or two years of preschool. The program had a carefully prescribed curriculum, intensive staff training, and low child to adult ratios. The researchers assessed academic performance in math and reading, social responsibilities, e.g. involvement in delinquent and criminal behavior, and economic issues over time in relation to welfare assistance and employment. Compiling these results to age 19, the researchers indicated lasting beneficial effects on numerous variables. In academic achievement, higher test scores from two percent to eight percent were noted among those who had attended preschool. The researchers found that students who had attended preschool had higher graduation rates and higher enrollment rates in post-secondary programs than controls. The percent enrolled in special education was 45% for the preschool group vs. 31% for the controls (Berrueta-Clement et al., 1984).

Other researchers have also found less need for special education and reduced student-retention rates when disadvantaged four-year-olds were provided preschool education (Asano, 1986; Sevigny, 1987). Indeed, results from the pooling of 12 independent research projects concluded that investment in preschool reduced the need for high-cost special education services and increased projected lifetime earnings for the children who participated (Lazar, Hubbel, Murray, Rosche, & Royce, 1977). The programs included in the

research had some common components--low child to adult ratios, regular inservice training for staff, close supervision, and carefully specified curriculum.

In further research, Darlington, Royce, Snipper, Murray, and Lazar (1980) studied the lasting effects of preschool attendance by pooling data from 14 longitudinal research and demonstration projects. Darlington et al., (1980a) found that preschool graduates had significantly fewer grade retentions and placements in special education than did the control groups (Asano, 1986; Foundation for Human Services Studies, 1980; Helmich, 1985; Lazar, Darlington, Murray, Royce, & Snipper, 1982; Philadelphia School District, 1982). When districts made a concerted effort to provide continuity in the children's programs after preschool, Irvine, Flint, Hick, Horan, & Kukuk, (1980) found the children who attended preschool were higher in general reasoning ability and knowledge of verbal concepts than controls. Nonetheless, although many early childhood education studies demonstrate positive impact on decreasing the need for retention and special education among minority and disadvantaged samples, none of these studies were conducted with rural children.

Opponents of formal education for four-year-olds have identified reasons why early childhood education would be detrimental. Willer, Zigler, Gardner, and Galle (Kutner, 1989) reflected a concern by many educators that early education could produce stress and frustration if the program were too academic. Kagan (1987) debated the advisability of mass education for all four-year-olds. A few excellent programs for at-risk children--Head Start, Perry

Preschool, the New York State Prekindergarten Program, and the Brookline Early Education Program--have succeeded in spurring developmental and cognitive growth of three and four-year-old children. However, Zigler (1987) cautioned that initiating programs for all four-year-olds would be inappropriate because the successful studies were conducted with academically at-risk children and because intervention programs differ. "A universal extension of preschool would not only have little effect...but would actually diminish our capacity to help those who could benefit most from early remedial care." Tizard, Hughes, Carmichael, and Pinkerton (1982) suggested that without continuous reinforcement of learned skills in the primary school or home, preschool education would have no long-term effect on later school achievement. Casto and Mastropieri (1986) conducted a meta-analysis of 74 studies on preschool education. The conclusions of the report were that although the programs were very similar and had large immediate benefits, these benefits declined rapidly and in fact, virtually disappeared after 60 months. Other researchers found that the immediate gains in language and IQ scores experienced by at-risk children attending preschool diminished over time. In several studies, the gains were indiscernible by the second and third grades (Berrueta-Clement et al., 1984; Evans & Hillman, 1983; Karweit, 1989; McKey, Condelli, Ganson, Barrett, McConkey, & Plantz, 1989; Revicki & Self, 1980).

Slavin, Karweit, and Wasik (1993) found evidence that attendance at a high quality preschool program had long-term benefits for children, but that preschool experience was not enough to prevent early school failure. They

stated that "preschool experiences...should be part of a comprehensive approach to prevention and early intervention, but a one-year program, whatever its quality, cannot be expected to solve all the problems of at-risk children" (Slavin, Karweit, & Wasik, 1993, p. 13).

Kagan (1987) raised the following issues:

1. Which children should attend preschool?
2. Should children be in any preschool program separated from the intimacy of home and family?
3. Would the demands of early education overtax young children?
4. How should comprehensive services be provided? and
5. Where should preschool programs be located?

Zigler (1987) raised additional issues concerning the appropriateness and effectiveness of preschool education. He stated that educators may be trying to solve childcare problems with preschool education. Programs which benefit economically disadvantaged children have little or no effect on advantaged children. Intervention programs which have demonstrated benefits are exemplary and often include family services. He cautioned that one year of preschool education cannot innoculate children against "the ravages of a life of deprivation" (p. 258).

The value of, and critical need for, early childhood education for all children has been debated in books, journals, newspapers, and magazines (Doremus, 1986; Elkind, 1986; Futrell, 1987; Grubb, 1987; Hymes, 1987; Kagan, 1985; Katz, 1987; Zigler, 1987). More parents have requested early

childhood education programs to meet increasing needs related to adequate child care, changing family roles, changing family structure, and accelerated demands of formal kindergarten programs (Slavin & Madden, 1989). Because the economic needs of the family household often necessitate dual incomes, a large percentage of the mothers of school age children are in the workforce. Working parents want public schools to provide more services for their children--day care, preschool, and after-school activities. Additionally, parents, who read the reports lauding preschool education as a preventive measure for school failure, wanted greater opportunities for their young children (Slavin & Madden, 1989).

Nonetheless, preschool intervention studies have focused almost exclusively on academically at risk, four-year-olds in urban areas (Beller, 1983; Berrueta-Clement et al., 1984; Darlington, et al., 1980a; Edgar, Heggelund, & Fischer, 1988; Evans & Hillman, 1983; Foundation for Human Service Studies, 1980; Gray, Ramsey, & Klaus, 1982; Larsen & Draper, 1984; Miller & Bizzell, 1984; Pinkett, 1985; Revicki & Self, 1980; Sevigny, 1987; University of the State of New York, 1982). Studies of four-year-old children in rural areas are virtually nonexistent (Archambo & Briscoe,1970; Johnson & O'Fallon, 1975; Jones, 1988; Parker, 1969). (See Chapter 2 for a review of rural programs.) As awareness of rural poverty and two-parent employment has increased, preschool programs were viewed as possible services that would benefit rural children. Since most of the research was conducted on urban programs, more data on programs for four-year-old children in rural areas is needed.

Based on an agricultural economy and having few cities over 100,000, Iowa had incidences of rural poverty and suffered from the economic crisis of the 1980s. Farms were repossessed; businesses in small towns went bankrupt or closed. People moved from rural areas into cities or to other states to find jobs. Iowa lost 38,000 in population during the 1980s (Goudy, 1988). Families which had previously enjoyed lower middle class stature economically found their family conditions changing in the 1980s.

Forty-nine percent of Iowa mothers with children under age six worked outside the home and 66% of all Iowa mothers with children ages 6 to 17 were in the labor force. One in 10 of Iowa children under age 18 lived in families headed by a single mother (Iowa Commission on Children, Youth, and Families, 1987). The Department of Education found the availability of child care programs in Iowa to be severely lacking (Phillips, 1988).

Recognizing the needs of young children, the Iowa Department of Education encouraged public schools to begin preschool programs. The Iowa Association of School Boards Committee recommended that the Iowa Legislature fund the move toward preschool education for four-year-olds to reduce the readiness and social differences among kindergarten students (Iowa Association of School Boards, 1987). However, the Iowa State Board of Education deleted the recommendation for preschools due to lack of funds, appropriate staff, and classroom space.

Iowa public schools have approached early childhood education cautiously. In the 1980s, less than 10% of Iowa public schools offered

preschool education through federally funded Chapter I programs, parent fees, Iowa Educational Opportunity Grants, general funds of local districts, or combinations of these sources (Grieves, 1986; Herwig, 1987). Despite efforts of a special task force and the Department of Education to incorporate prekindergarten programs in Iowa public schools, the Iowa Board of Education was not able to provide financing for new programs. Figures from the Iowa Department of Education indicated that by 1989, only 13% of public schools provided any type of preschool program for four-year-olds (Iowa Department of Education, 1989).

To increase opportunities for children, the Iowa Department of Education made a major commitment to prevention of school failure through funding grants for innovative educational programs for preschool-age children. During 1991-92, the department awarded grants totaling almost $5 million to 64 comprehensive child development programs provided by Head Start, non-profit agencies and public school districts. More than 1,100 children, ages three through five, received education, health, medical and dental services through these grants. Since 1989, the Department of Education has funded programs for nearly 3,000 children. Some early evaluations, including parent surveys, have indicated children's growth in school-related skills and improved parenting skills (Iowa Department of Education, 1992).

Need for Study

Most of the research on preschool education has been based on at-risk populations in metropolitan areas (Asano, 1986; Beller, 1983; Berrueta-

Clement et al., 1984; Foundation for Human Services, 1980; Lazar et al., 1982; Philadelphia School District, 1982; Sevigny, 1987; University of the State of New York, 1982). However, much of the United States has rural populations which may also benefit from preschool education. Rather than generalize from these previous studies in metropolitan areas, research is needed on rural programs to determine whether interventions with rural, four-year-old children have lasting benefits. Virtually, no studies exist that investigate the effectiveness of preschool intervention in rural communities.

Specifically, does preschool experience improve academic achievement and reduce the need for special education or grade retention? Comparisons of students who attended preschool programs in rural areas with controls would provide important information on early childhood programming for students in rural areas. In Iowa, the preschool program cited in this research has been operating since 1977 and has the distinction of being one of the first rural preschools in the state (Iowa Department of Education, 1992).

In this study, a review is conducted of previous research which has both current and future implications for early childhood programs in rural areas. The current study provides information about the effects of a rural-based program offered to children in a public school setting.

Purpose of Study

The purpose of the study was to determine whether students who participated in the preschool program for rural four-year-olds differed significantly from other students of the same age who did not attend any formal

early education program. The two groups were compared in the number of special education placements, the frequency of grade level retention, and in academic achievement as evaluated by the reading and math scores on the Iowa Test of Basic Skills.

Independent and Dependent Variables

The independent variable was preschool education. The dependent variables were frequency of special education placement, frequency of grade retention, math achievement, and reading achievement.

Research Hypotheses

The research hypotheses for the current study were as follows:

Special Education

First, it was hypothesized that children who received a preschool education would demonstrate a fewer number of special education placements as compared to control group children during grades 1-6. Research has shown (Austin Independent School District, 1984; Royce, Darlington, & Murray, 1983) that children who received preschool education are less likely to receive special education services during grades 1-6 as compared to children who did not have preschool education.

Grade Retention

Secondly, it was hypothesized that children who received preschool education would demonstrate a significant difference in the frequency of grade retention during elementary grades 1-6. Research has shown (Austin Independent School District, 1984; Jones, 1988; Lazar et al., 1982; Royce et al.,

1983) that children who received preschool education have fewer incidences of grade retention than children who did not receive preschool education.

Educational Development - Reading

Third, it was hypothesized that children who received a preschool education would demonstrate no significant difference in reading achievement during elementary grades 3-6 as compared to children who did not attend preschool. Research indicates that achievement differences measurable as a result of one year of preschool education diminish over time and are not significant after four years of further instruction (Casto & Mastropieri, 1986; Darlington et al.,1980a; Miller & Bizzell, 1983a; Royce et al., 1983; University of the State of New York, 1982).

Educational Development - Math

Fourth, it was hypothesized that children who received a preschool education would demonstrate no significant difference in math achievement during elementary grades 3-6 as compared to children who did not attend preschool. Research indicates that achievement differences measurable as a result of one year of preschool education diminish over time and are not significant after four years of further instruction (Casto & Mastropieri, 1986; Darlington et al., 1980a; Miller & Bizzell, 1983a; Royce et al., 1983; Stallings, 1987; University of the State of New York, 1982).

Limitations

The study was limited by using a post hoc analysis of data acquired over an 11 year period. The researcher had no control over the selection of test

instruments or the data recorded. The study was limited to the district's administration of the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the Iowa Tests of Basic Skills (ITBS). In some cases, information culled from student files was incomplete; in other cases, information was not recorded at all. The 60 students involved in the study were not evaluated uniformly; 58 of the 60 in the sample were given the PPVT-R. There are also missing scores on the ITBS grades 3-6; by grade 6, only 50 per cent of the sample were being tested by a formalized procedure. These incidences are reported in Chapter 3. Therefore, the results of this study are tempered and readers should be cautious in drawing generalizations about the effects of preschool intervention.

The post hoc analysis also prohibited the researcher from examining and making inferences about other issues which might have been a beneficial result of preschool intervention. Nonetheless, given these limitations, the researcher found the preschool screening and treatment practices used in the study to be reflective of the practices currently and widely used in the field of early childhood education.

The study also focused the investigation exclusively on white, low-middle class children who reside in rural Iowa. Therefore, any findings gained from this study can only be applied to comparable groups of children.

Chapter 2

REVIEW OF THE LITERATURE

History of Early Childhood Education

History

The beginning of early childhood education can be traced to the influence of Friedrich Froebel, Jean-Jacques Rousseau, and Johann Heinrich Pestalozzi, educators in the 1800s. They shared concern for using appropriate child activity to foster a natural sequence of development and to respect the child's natural instincts of curiosity and exploration. In their methods of teaching children, they used sensory experiences and manipulatives to help children progress from the concrete to the abstract through successive stages (Adams, 1988).

Although she had little influence on early childhood in the United States until the l950s, Maria Montesorri designed a teaching method for working with poor and mentally retarded children. Montesorri, an Italian physician, sequenced learning into small steps to develop use of the five senses; she related activities to practical life, emphasizing the care of one's self and environment. A key Montesorri concept was the observation of individual children to determine their readiness to undertake new tasks and make progress toward new levels at individual rates (Weber, 1984).

John Dewey thought children should be engaged in real-life activities, based on their needs and interest, to promote both problem solving and

appropriate socialization. In Dewey's classroom, children participated in planning, organizing, and evaluating their own learning experiences while teachers acted as facilitators and guides. G. Stanley Hall, Edward Lee Thorndike, and Arnold Gesell programmed learning for early childhood by basing instruction on child growth patterns, respecting native intelligence, and considering individual differences (Weber,1984).

Basing beliefs about early childhood education on the research and theories of these educators, parents and teachers determined that formal instruction must await increased maturity. Thus, preschool in the United States became an ante-educational experience. Secure and responsive environments, appropriate materials to develop skills, and supervised and structured play were important components of the preschool experience (Goodlad, Klein, & Novotney, 1973).

In the beginning, preschool was tailored for the affluent. There were few programs for the poor, non-English speaking, illiterate immigrants, or rural children. During this period (1920-1940) screening tests were devised to determine readiness. In the next decade, children with higher scores received preference to enroll in preschool (Goodlad et al., 1973).

World War II mobilization and school reform

World War II influenced the preschool movement by making early education a necessity. During the national mobilization, women went to work in war-related industries. Nursery school classes and child care centers were made available on an 24 hour basis for the convenience of parents

working in the factories. The schools were supported by federal funds under the Lanham Act. Some centers became models of comprehensiveness and imaginative concern, meeting most needs of the family. When new families arrived in the city, the centers provided child care while the family got settled (Goodlad et al., 1973).

After the war, the Lanham Act funds which supported early childhood centers ended; the buildings which once housed nurseries and day care centers were left abandoned or used otherwise. Federal early childhood education for children of working parents was a memory. Educators began reform to correct the 'permissiveness of progressive education' on which they blamed the academic deficiencies found while testing the war recruits. Reform had already begun when Russia launched Sputnik in 1957. The next decade saw tumultuous changes as education moved to the forefront of national policy.

Contemporary psychology

Piaget's theory of cognitive development in children influenced educators of the post-World War II era. Originally trained as a biologist, Swiss-born Jean Piaget employed wide experimentation and interviewing of children in his theory of cognitive development. For early childhood, Piaget advocated hands-on, concrete experiences, with a chance to solve real and relevant problems, handle materials, and learn by doing (Adams, 1988).

In 1964, Benjamin Bloom suggested that almost half the development present by age 17 was attained by four years of age. Bloom stated that another 30% was developed between ages four and eight. He based his theory on a

meta-analysis of all major longitudinal studies done in the United States prior to the 1960s. Bloom's theory--that the greatest effect on intelligence occurred between the ages one and five--made a powerful impact on those already concerned with cognitive development and the education of young children (Goodlad et al., 1973).

The thinking of the American public after 1960 was impacted by the learning theories of Piaget, Bloom, Gesell, and Montessori. Contemporary developmental psychologists, Skeels, Kirk, Goldfarb, Spitz, Wolf, Bloom, and Hunt asserted that intervention of some type was needed to provide intellectual, social, and emotional development for children. The critical assumption was that environment and education were primary determinants of a child's intellectual functioning; enrichment experiences were needed to counteract the effects of deprivation. In the 1960s, experimental projects providing enrichment experiences and compensatory education were formed to demonstrate the beneficial effects of education to the young child (Lichtenstein & Ireton, 1984).

School failure

Lichtenstein and Ireton (1984) believed that the primary impetus for preschool education was school failure. Lack of appropriate education accounted for over 5 million children failing school subjects or being excluded from school entirely. The unmet educational needs of the disadvantaged were increasingly evident and more firmly entrenched over time. Cycles of failure developed which resulted in costly services, loss of productivity, and immeasurable losses in terms of intellectual and

social/emotional development.

Professionals in schools, clinics, and agencies ascribed to early intervention as a means of breaking the cycle of failure. Programs were designed to provide motoric or cognitive stimulation, to assist with coping skills, to provide enrichment experiences, to teach social skills and adaptive behaviors, to foster positive attitudes towards learning, to improve home environment and parenting skills, or to provide any combination of these services (Lichtenstein & Ireton, 1984).

Postwar pressures

Impacted by the threat of Soviet supremacy and influenced by the leading theorists, legislators and educators proposed that to prevent failure and assure success, children must receive early childhood education. Demographic and societal changes following World War II accelerated the move to the cities and the emergence of slums and suburbs. Prior to the 1960s the federal government had relegated the responsibility of education to the individual states. Since the taxable property in large cities could not support the inflationary costs of quality education for great masses of children, states sought additional funding for early childhood education from federal coffers.

The above factors--World War II mobilization, educational reform, post war pressures, contemporary psychology, intervention to alleviate school failure, and increased budgetary needs due to demographic changes--converged in the mid-sixties to influence the nation and Congress toward compensatory education. The political response was the Economic Opportunity

Act of 1964 and the Elementary and Secondary Act of 1965, two historic pieces of social legislation which created Head Start and Parent and Child Centers.

As a result of the legislation and programs, two remarkable things happened in the 1960s. The young child had been discovered as an answer to the prevailing political woes--meeting the Soviet threat and alleviating the cycle of poverty. With early childhood schooling moving into the mainstream of inquiry and practice, disadvantaged children were granted primary access to publicly supported preschools. The premise on which the programs were established was based more on assumptions than clinical or empirical research.

Research on Early Intervention

Early intervention was based on three assumptions: (1) that early intervention produced positive effects in intellectual growth, social adaptation, readiness for school tasks, and parental attitudes toward school, (2) that early childhood programs could be implemented without exorbitant costs, and (3) that children with developmental problems could be accurately identified (Lichtenstein & Ireton, 1984). These assumptions made in the early 1960s needed to be tested by researchers.

Studies which reported positive effects

Studies of pilot programs for prekindergarten children were conducted to ascertain program effectiveness. In 1975, 12 investigators (Lazar et al., 1982) pooled their research efforts to determine the effectiveness of early intervention. Projects within the consortium dated from the early 1960s. The original

participants in preschool were teenagers, well along in their school careers. The investigators contacted the youth who had attended preschool to ascertain the effectiveness of preschool education. When students were compared to controls on IQ, school placement, achievement tests, self-concept inventories, and personal interviews, Lazar's group acted as a neutral party to analyze the data. They concluded that there were long-term educational benefits of preschool. Children who had preschool experiences were significantly less likely to be assigned to special classes or retained in grade, compared to control children. When the costs of remedial programs, retention, and juvenile detention services not needed by the preschool attendees were calculated, a preschool cost-benefit analysis indicated that benefits outweighed the costs by 236%. All successful programs had the following in common: low child-to-adult ratios, regular inservice training for staff members, access to supervisors who monitored and supported their efforts, and a carefully specified curriculum.

Miller and Bizzell (1983a) sought information on characteristics and effects of four programs. They studied four areas of Louisville, Kentucky which had high Black populations, high unemployment, low income, substandard housing, and a high rate of high school dropouts. Children were assigned to Head Start, or one of four experimental programs--Demonstration and Research Center for Early Education (DARCEE), Montessori, Bereiter--Engelmann, and traditional. The authors found the varied programs in Louisville had differing impacts on school achievement and IQ as late as eighth grade. The prekindergarten year produced an achievement advantage for

didactic programs, but when children reached middle school those who had been in Montessori programs rated higher than other children. Children who participated in the Montessori programs had the lowest retention rate, the highest school success ratings, and the highest percentage of high school graduates. At seventh grade, on the average, 16% of participants in the Montessori programs were at or above the 50th percentile.

Despite weak evaluations of Head Start (e.g., Jensen, 1969) of little or no effect, those who conducted the programs continued to believe in the concept of early intervention. In later evaluations of Head Start, Mann, Harrell, and Hurt (1976) concluded that participation in full-year programs accounted for gains in cognitive development, social behavior, and health.

The Foundation for Human Service Studies (1980) researched the persistence of preschool effects from 11 research projects. The group involved approximately 3000 low-income children over a 20 year period. The research indicated that early education led to reductions in the rate of assignment to special education classes and reduction in the rate of grade retention.

In a longitudinal evaluation of the half-day child development program for four-year-olds in South Carolina, Jones (1988) studied participants in four classes. Due to subsistence income levels of the family, 83% of the children were on free lunch programs. Of the participants, 79% of the children were Black students and 65% were male gender. By grade 2, the experimental group had outscored controls in mathematics. At grade 4, the experimental group compared favorably to 'normal' not high risk children in math and

reading. Jones found more socially competent children among preschool attendees and social skills development in young boys.

In an analysis of Head Start research from 1965 to 1984, Collins (1984) reported the projects demonstrated convincingly that the educational attainments and life circumstances of low income and minority children were significantly improved. In an examination of 1500 studies, Collins indicated that the children who appeared to benefit the most from Head Start were from single parent homes, had mothers with tenth grade, or less, education, had low cognitive scores, were from small families, were handicapped children, and/or Hispanic children. The children demonstrated more success in school as measured by retention in grade, teacher rating, staying in school, and school placement in regular classes. Socio-emotional development of Head Start children was comparative to the development in average children; Head Start children were more aggressive, attention-seeking, sociable, and assertive than peers. However, Collins found that Head Start gains were not of sufficient magnitude to enable children to equal the performance of the average middle-class children on standardized tests.

In a follow-up study of the Louisville Experiment, Miller and Bizzell (1983a) found no significant differences in IQ among preschool program groups when looking at long-term effects of four preschool programs when students were at sixth, seventh, and eighth grade levels. However, Miller and Bizzell reported differential effects in math and reading in three grades relating to both preschool program and sex. In a subsequent study, Miller and Bizzell (1984)

found that males who had participated in Montessori preschool programs and females who participated in DARCEE preschools were high in follow-up achievement test and IQ data given at ninth and tenth grade levels when compared to groups of students in four preschool programs and a control group. Montessori males were performing at about grade level on reading and math.

In the Perry Preschool Study, Berrueta-Clement et al. (1984) conducted extensive research on preschoolers from a economically depressed community. The project was a study of 123 children from families of low socioeconomic status, who were termed at risk of failing in school. The purpose of the study was to explore the long-term effects of participation versus nonparticipation in a program of high quality early childhood education. From a common neighborhood in Ypsilanti, Michigan, the three- and four-year-olds were randomly divided into experimental and control groups, with the experimental group attending preschool. Information was collected at various points in their educational career and at 19 years of age. The researchers assessed scholastic achievement, need for retention or special education assistance, social responsibilities, e.g. involvement in delinquent and criminal behavior, and economic benefits to society as assessed by welfare assistance and employment. Compiling these results to age 19, the researchers indicated lasting beneficial effects on numerous variables. The students who participated in preschool evidenced higher achievement scores on standardized tests from 2% to 8% during elementary school. The largest differences between the groups was in high school graduation rates; 67% of the experimental students

completed high school compared to 49% of the controls. In a comparison of special education class enrollment, 45% of the preschool students were enrolled compared to 31% of the control group. Young adults who attended the Perry Preschool Project also demonstrated more social responsibility with higher employment rates, less delinquency and crime, less need for welfare assistance, and less incidence of teenage pregnancy than controls.

In a longitudinal study of Direct Instruction/Follow Through Programs, Stallings (1987) found that children in the Bereiter-Englemann program who attended the Follow Through Program through third grade gained academically and by ninth grade were achieving at grade level, were less likely to be retained in grade, more likely to graduate, and more likely to apply for college than controls. The Direct Instruction/Follow Through Programs were developed for children kindergarten through third grade to help maintain pupil gains from Head Start or other programs. The program was based on Skinner's model of operant conditioning.

In a comparison study of students in Detroit Public Schools who participated in ECIA Chapter I preschools in 1973-74 and students who did not participate, Sevigny (1987) followed progress and achievement of children through twelfth grade. Sevigny found preschooler attenders had higher grade point averages, better school behavior, less need for compensatory services, were closer to national norms in math and reading, and were 40% higher graduation rates than controls.

In a 12 year follow-up study of Philadelphia programs, Beller (1983)

examined whether the length of preschool affected the intellectual and socio-emotional development of economically disadvantaged children. Beller attempted a comprehensive assessment of intellectual and socio-emotional development, employed multiple criteria and measures, and examined family background. Using length of preschool as the primary independent variable, and interaction of length of preschool with other variables to study its effect on development, Beller found significant effects of preschool education for the disadvantaged in academic achievement assessed by school grades, teacher comments, and retention in grade. For all three variables, length of preschool was the determinant. Effects on higher classroom grades over the first four grades were more consistent in girls, were more significant in second and third grades, and disappeared by fifth grade. The relationship between preschool experience and less retention in grade reached significance among children with employed parents and approached significance among children of father-present families.

Asano (1986) studied the Philadelphia program for disadvantaged, preschool children. When compared to controls, there was a significant difference in the number of children placed in special education. Specifically, fewer children who had attended preschool were placed in special education. Children who had attended preschool were promoted to the next grade level more often than controls.

As a part of the Consortium for Longitudinal Studies, Royce, Darlington, and Murray (1983) diagrammed the direct and indirect effects of preschool

programs for disadvantaged children. Direct effects found were pride in achievement, higher occupational expectations for the future, higher high school graduation rates, lower special education or grade retentions, and higher IQ scores at age six.

Other researchers (Darlington et al.,1980b; Helmich,1985; Jones,1988; and University of the State of New York, 1982) found that preschool participants demonstrated improved scholastic achievement and reduced frequency of special education placement or grade retention throughout elementary school years.

Cost calculations and benefits

As an independent corollary to the Perry Preschool study, the economic value of benefits were considered by Gramlich, Chairman of the Department of Economics at the University of Michigan (Berruetta-Clement et al., 1984). After adjusting for inflation, Gramlich calculated that during the lifetime of the participants, the preschool returned economic benefits of seven times the cost of one year of the program. Of perhaps even greater benefit was the improved quality of life for participating individuals, their families, and the community at large.

In a study of children in the Perry Preschool Project at Ypsilanti, Michigan, Weber, Foster, and Weikart demonstrated that the subsequent reductions in special educational and social services more than compensated for the original costs of providing early intervention services (Weber, Foster, & Weikart, 1978).

The Austin Independent School District (1984) reported that early childhood education cut special education placement by 50%, reduced retention rates and high school dropouts, had effects on achievement test scores to the fifth grade level, and had short term effects on IQ. They also found an improvement in behavior and motivation in elementary school. Analysts for the district found preschool programs to be a cost saving for the district.

Proponents of early childhood programs researched aspects and interventions that indicate programs have economic cost benefits to society as a whole. They cited intellectual and social achievements, greater school success, and lower rates of delinquency, teenage pregnancy, welfare and unemployment.

In another study of the Perry preschool (Lazar et al., 1982), preschool cost-benefit analysis indicated that benefits outweighed the costs by 236%. All successful programs had the following in common: low child-to-adult ratios, regular inservice training for staff members, access to supervisors who monitored and supported their efforts, and a carefully specified curriculum. School administrators, legislators, and taxpayers opposed the increased expenditures of a universal move to preschool education as unnecessary for every child (Elkind,1986). Zigler (1987) debated the advisability of the mass movement to early childhood experience for four-year-olds on the basis of generalizing pilot program results for disadvantaged children to all youngsters. Zigler's doubts were based on whether duplication of the quality of the Perry Preschool Project could be effected in the public school. Zigler pointed out that

the Perry Preschool sample was nonrepresentative of children in general, e.g. IQ of 61-88, low-income, Black, and high parent participation in the project. He also questioned whether the cost savings of preschool were overestimated.

Cost benefits was one of the four issues raised by Karweit (1989). She stated that the knowledge base on which decisions about early education were formed lacked empirical studies of the relative costs/merits of alternative ways of combining preschool and other services for young children. Recognizing that there were pressing child care needs addressed by preschool, Karweit called for studies of the costs and effects of alternative arrangements to meet the child care, educational, and emotional needs of young children and their families.

Nonpositive and neutral effects of preschool

One of the most widely publicized and controversial studies evaluating Head Start was conducted by the Westinghouse Learning Corporation (1969). The study used a post-test only research design, comparing the achievement of Head Start attendees with a sample of students matched on age and sex. The Head Start sample included children who had attended summer school only and children who had attended one year Head Start programs. The post-test only comparisons indicated no measurable advantage of Head Start children in summer programs over comparison children. The full-year program was more effective than the summer program, but the lack of significant effects led the authors to conclude that the benefits could not be described as satisfactory.

Other researchers reported neutral effects. Despite some positive results, none of the programs in the Louisville experiment (Miller & Bizzell,

1983a) succeeded in raising school performance at the middle school level to national norms. Researchers (Gray et al.,1982; Revicki & Self,1980) found that IQ gains were not sustained over four years and achievement differences were minor, when compared to control groups.

In a comparison of 201 middle-class children, McKinnon (1982) found no significant differences on physical, self-help, social, academic, and communication scales. In a meta-analysis of 74 research studies, Casto and Mastropieri (1986) found that the immediate benefits of preschool decline rapidly and largely disappear after 60 months. Zigler (1987) commented that successful early intervention programs had benefits for economically disadvantaged children and differed from standard school fare in their provision for primary health and social services.

Karnes, Shwedel, and Williams (1983) compared five approaches for educating young children from low-income homes; they found no marked difference in IQ among groups apparent by high school graduation. Karnes et al. (1983) concluded that one year of preschool was not enough to ensure high levels of school success over time among children from low-income families. Karweit (1989), and McKey, Condelli, Ganson, Barrett, McConkey, and Plantz (1989) concluded that the long-term impact of preschool programs was not on the IQ of children who participated but on school-relevant skills. Pinkett (1985) found no differences in social and cognitive competence by third grade in advantaged children who attended preschool when compared to children who did not attend. In 1976, charges were made that proponents of early

intervention operate strictly upon faith (Lichtenstein & Ireton, 1984).

Other efforts have also failed to substantiate significant long-term benefits. Concerning the effects on reading and mathematics achievement in elementary schools, the Gray et al. (1982) study provided little reason to expect continued effects of program participation. The performance of students in math or reading at grade 4 and grade 6 was not significantly different from that of control students and did not support long-terms effects of early intervention effort on achievement.

Karweit (1989) investigated effective preschool programs for students at risk using the programs that have been certified as effective by the U.S. Department of Educations' Joint Dissemination Review Panel (JDRP). Primarily interested in programs whose effectiveness was determined by an adequate experimental design and which focused on programs for four-year-olds, Karweit found only three programs which randomly assigned students to treatment and control groups. The University of the State of New York study (1982) found that preschool participants demonstrated improved scholastic achievement and reduced frequency of special education placement or grade retention throughout elementary school years. The Early Training Project (Gray et al., 1982) had significant effects on important variables of grade repetition, special education status, and high school completion. However, the Gray et al. study provides little reason to expect continued effects of program participation on math and reading achievement. Karweit also reviewed the Perry Preschool program (Berruetta-Clement et al., 1984) and found it had minimal long-term

effects on achievement as measured by standardized tests. Both the Berruetta-Clement et al. and Gray et al. studies showed similar patterns of effects on reduced referral to special education and lower rates of high school dropout (Karweit, 1989).

Rural studies

In a database search for rural preschool program studies, few research projects on four-year-old children were found. The projects in rural areas employed mobile units, television programs, and home-centered programs involving parents. One Appalachian project involved a three-dimensional approach which consisted of weekly home visits by trained paraprofessionals, weekly classroom sessions in mobile units, and utilizations of television programs with accompanying parent-guide activities (Johnson & O'Fallon, 1975). Pre-post test results indicated that the program had a measurable effect on children's cogitive and social abilities; more effect was evidenced when the children had participated in the program two years.

Archambo and Briscoe (1970) conducted a four-year follow-up study of children in the Rural Child Care Project to ascertain intellectual functioning status. The greatest losses in intellectual functioning for former project children occurred in the first year of public school among those scoring above 80 on their first Binet test but who were retained at grade 1. Project children with two years of program experience were higher than summer Head Start children in general achievement but did not differ from children with less than one year's experience. Archambo and Briscoe found that scores on the California

Achievement Test given to former project children in grades 2 and 3 did not differ from their matched nonproject controls.

Parker (1969) studied the use of a mobile reading laboratory for rural four-year-old children to determine the effectiveness of a structured, psycholinguistically-based preschool curriculum on Black, disadvantaged children and found positive significant differences in treatment and control groups after 3 and 9 months of treatment.

There was a database search conducted in February, 1990, to find information on studies of school-based preschool programs for rural four-year-olds. No information on school-based preschool programs in the Midwest was found.

Issues in assessment and identification

As researchers explored preschool data, one issue in providing early education was whether children with developmental problems could be accurately identified as problems were first developing (Lichtenstein & Ireton, 1984). Preschool age children present special challenges and demands for the assessor since children's day-to-day behavior can be highly variable (Paget & Bracken, 1983).

Another issue raised by Paget and Bracken (1983) was the technical excellence of 200 instruments developed in the years 1960-1980 for evaluation of skills in young children. In a comprehensive evaluation guide of over 120 preschool and kindergarten tests, the general ratings for normed technical excellence were judged either poor or fair. Children's progress through

developmental stages also varies considerably, raising questions about norming procedures and scales.

Shepard and Smith (1986) conducted an extensive review of research on school readiness measures in relation to kindergarten retention or extra year programming. They indicated two important issues in school readiness measures should be addressed by educators-- greater test validity for decisions of placement and due process. Shepard and Smith reported that none of the existing readiness instruments was sufficiently accurate or demonstrated high correlations with later school success. "The cognitive domains that can be sampled at younger ages are only moderately related to the cognitive skills demanded later by reading and other academic tasks" (p. 83).

The type of functions assessed was a third issue in the testing of preschool children; many criterion-referenced measures are specifically designed to assess functions associated with school demands. Paget and Bracken (1983) reported that measurement problems of inadequate test validity (content, construct, predictive) and inadequate standarization procedures had not been resolved to the satisfaction of psychologists and educators.

In conducting evaluations of young children, motor development was found by Paget and Bracken (1983) to be an area of particular importance because of its link to general health, to social and emotional adjustment, and to integrity of neurological functioning. Children who exhibit motoric problems have a greater incidence of difficulty in making appropriate social and emotional adjustments in play and learning situations. However, there was a

striking lack of convergent information about developmental changes that occur in gross motor control in the preschool child. Researchers reported that one of the most dramatic characteristics of gross motor development in the preschool child was its great variability. Figures in a table or on a chart cannot be a irrefutable indication of whether or not a child is "normal".

In many of the studies, the formal assessment of language was a critical factor in determining whether four-year-olds needed intervention programs. Developmental scales and normative measures of language have questionable value since structured tasks charactistic of many instruments are only remotely related to the pragmatic demands of language. Several factors caused young children to vary considerably from one time to another and any assessment should be considered only an approximation of true abilities (Paget & Bracken, 1983).

A fourth consideration in assessment was the question of appropriateness. Peck, McCaig, and Sapp (1988) have emphasized that young children may be intimidated and have difficulty performing on command as required in many testing situations. Cannella and Reiff (1989) stated that normal and even developmentally advanced behavior for particular individual children under given testing conditions may appear less advanced. The investigations into the effects of early assessment for entrance/promotion have revealed either no effect or negative effects on children. Salvia and Ysseldyke (1981) reported that knowledge about a child's readiness may provide invaluable information to ensure an appropriate educational program, or it can

provide destructive self-fulfilling prophecy that actually may hamper a child's development. In a discussion of the uses and abuses of early childhood screening, Meisels (1987) reviewed implications of the limitations of screening instruments for early childhood educators. Meisels stated that testing in early childhood should be used to make the more appropriate services available to the largest number of children, not to exclude children from public education services which would be antithetical to legal or constitutional rights to free education and equal protection. Meisels indicated that the screening inventories and readiness tests were helpful to determine children in need of modified classroom programming.

Issues Concerning Program Effectiveness

Karweit (1989) cited the lack of sufficient empirical studies on the effects of major approaches to preschool curricula. In a review of effective preschool programs, she found only three studies which met the criteria of an adequate experimental design and used the best-evidence synthesis methodology. Karweit stated that more intense research scrutiny of preschool curriculum was needed. In addition, many of the evaluations of program effectiveness were based on pre-post gain scores; the procedures did not control for other factors, besides the program, which may have contributed to the gain. Karweit felt that more studies contrasting the combinations of services would provide an empirical base for future decisions among educational alternatives for young children.

Elkind (1987) theorized educational practice was determined more by

economic, political, and social considerations than knowledge about good pedagogy for children. To satisfy the growing demands of a changing society, the 'competent child' theory was developed, forcing the child to be independent at an early age. Elkind (1987) decried the "miseducation of the young child" to meet society's personal and political expectations.

Finally, researchers agreed that any decision to test young children must be based on knowledge of child development, psychometric principals, the limitations of screening instruments and appropriate use of tests, and the impact of tests on children's future development and programming.

Components and principles of high quality programs

Guidelines for developmentally appropriate practice of a high quality preschool program have been researched and outlined by the National Association for the Education of Young Children (NAEYC) and supported by the U.S. Department of Education (NAEYC, 1986; Grubb, 1987). NAEYC and the U.S. Department of Education agreed that a high quality early childhood program provided a safe and nurturing environment promoting the physical, social, emotional, and cognitive development of young children while it responded to the needs of families.

Most states required at least two elements that are crucial to the success of early childhood programs: the teacher-pupil ratios are about I:10, and teachers have training in early childhood education. In addition, the programs required some form of parental involvement which was judged to be consistent with good practice in early childhood programs.

The Role of the States

As states began providing more preschool programs, children in poverty, children designated to be at risk for school failure, or disadvantaged children were most often targeted for services. States used two approaches to identify vulnerable children: environmental or other risk conditions, and some type of screening device. Environmental conditions included districts which have low achievers, low-income residential areas, minimal family income, limited English proficiency, and readiness deficiencies established by assessment (Morado, 1986).

Most programs had regulations similar or identical to requirements for private preschools. As the role of state education agencies in early education evolved, Morado concluded that important determinates of state programs were appropriate standards, equity and equal access, meeting community needs, and continuity and coordination of services for young children (Morado, 1986).

Iowa's role

Iowa moved deliberately in providing state funding to early education, primarily because of economic considerations. A prekindergarten task force was created in June, 1986, to respond to the growing concern for early education. The task force had two charges: to design a plan for establishing appropriate prekindergarten programs and to strengthen existing kindergarten learning experience.

The Department of Education proposed a standard for prekindergarten to

be implemented in 1992 on a permissive basis; however no state funding would be provided. In January, l988, the state board removed the standard because of financial constraints operating in Iowa. Legislators, educators, and other agencies expressed concern for the needs of children, but felt funding was not available to provide early education programs (Phillips, 1988).

In 1988, there were 33 school districts in Iowa operating prekindergarten programs with an enrollment of 1,068 students. The programs were funded through Chapter I, parent fees, local general fund monies, Iowa Enrichment Tax, Iowa Education Opportunity Grant, Educational Improvement Project money, or combinations of the funds. By December of 1989, a total of 59 school districts had some kind of preschool program for four-year-olds; many of the programs provided for the 1, 248 students were for handicapped preschoolers as mandated by P.L. 94-142 Education for All Handicapped Act (Iowa Department of Education, 1989).

Implications of the Studies

The Consortium for Longitudinal Studies (1983) pooled long-term follow-up data from 12 experimental programs. They found that children who participated in preschool programs were less likely to be assigned to special education classes and less likely to be retained than controls. They found some indication that children who participated performed better on achievement tests than did controls.

As editor for the Consortium of Longitudinal Studies, Lazar (1983) concluded that any well-designed program to stimulate and socialize infants

and young children from poor minority families would be effective based on the findings from pooled research. Low income children enrolled in the programs more often met school expectations than children who were not enrolled. Lazar speculated that a system of mutual reinforcement between the parent and child, the teacher and child, and the combination might be responsible for the long-term effects of preschool. The studies demonstrated that the provision of appropriate services mitigated the depressing effects of poverty on cognitive and social development to varying extents. Lazar concluded that more research of a longitudinal nature was needed.

Zigler (1987) suggested that the evaluation of any intervention program should be conducted by a researcher not involved in the development of the model being evaluated. He concluded those who received the most benefit from intervention at four-year-old level were children whose mothers' level of education was low, children from families with minimal income, or children who were handicapped and/or non-English speaking. Zigler cautioned that the cost of providing quality preschool education to all children would outweigh the potential benefits.

Consequently, the stage has been set for more debate on the long term effects of early intervention programs. In research of the Head Start projects for disadvantaged four-year-old children from 1965 to 1984, Collins (1984) reported that the pivotal issue in early childhood programs no longer centered on effectiveness. Collins said the current issues focused specifically on (1) the combination of program variables leading to the greatest developmental gains

at a reasonable cost, and (2) the continuity of learning and developmental gains achieved in preschool and at home with curricula of the public schools.

Karweit (1989) found that a limitation in available studies was that there was no consideration given to how preschool was connected to the kindergarten and elementary grades. Since resources for education were and continue to be limited, Karweit felt that it was important to assess whether placing resources into preschool was more effective than adding the same resources to later programs. Karweit stated that spreading limited resources over more services would not benefit very many children--at risk or otherwise. The critical question, raised by Karweit, was how the demand for preschool can be balanced against the urgent need for so many other educational services for at-risk students.

Educators and legislators need research on preschools to answer educational concerns about early intervention programs. Most of the published research came from projects which have conditions and populations dissimilar to Iowa. Research on a preschool for four-year- olds in a rural Iowa community would supply some valuable data to the current debate. The following chapters contain research data on such a project.

Summary

The beginning of early childhood education was traced through the 19th and 20th centuries as educators developed programs due to a concern for children's experiences; educators were also influenced by social pressures and historical necessity. Early intervention programs were designed to offset

school failure, enhance children's early experiences, and secure the political and economic future of the country. The chapter contained a review of research on the positive effects in intellectual growth, social adaptation, readiness for school tasks, and parental attitudes. The programs for disadvantaged, four-year-old children had positive effects when the programs were high quality and age-appropriate. Advantaged and middle-income children received less noticeable benefit from attending preschool. In order to provide high quality programs for the mass education of four-year-olds, researchers felt the resulting high costs would be prohibitive and would outweigh the potential benefits. The components of high quality programs specified teacher-pupil ratios and understanding of child development. Assessment has become a critical issue in early childhood programs; instrumentation, child development, appropriateness, and research on school readiness measures were discussed. Implications of the research indicate that more research is needed before educators can justify programs for four-year-old children in rural areas.

There is a need for further examination of preschool programs for rural children, testing whether four-year-old children who participated in preschool demonstrated significant effects through subsequent elementary school grades. In order to explore this question, the researcher compared children who participated in a rural Iowa preschool program with controls on the following variables--placement in special education programs, grade level retention, and achievement in math and reading.

Chapter 3

METHODOLOGY

The purpose of the study was to determine whether students who participated in the preschool program for four-year-olds in a rural school district differed significantly in specific criteria from other students of the same age who did not attend any formal early education programs. This chapter describes the methods and procedures used to determine whether enrollment in a preschool program effects special education placement, frequency of grade retention, and academic performance in reading and math.

Operational Definitions

Disadvantaged: Disadvantaged denotes a lack of the ordinary and common social and economical options, or living in conditions below poverty level as designated by the Poverty Income Guidelines of the United States Department of Health and Human Services.

Early Childhood Program: Early childhood designates a type of program which is cognizant of the physical, social, and emotional needs of children and provides for activities at an appropriate age level in order that the children may reach maximum potential.

Kindergarten: Kindergarten is an entry level program provided for five-year-old children in public and private schools.

Preschool: Preschools are programs designed for children from three to five

years old, that provide opportunities for learning readiness skills for kindergarten, gross and fine motor skills, language development, and social interaction.

Special Education: Special education is a set of programs for children who deviate from the average child in learning ability because of exceptional intelligence and ability or handicapping condition due to deficits in social, emotional, physical, or mental characteristics.

Procedures

Permission to use data collected by a local school district in rural Iowa was acquired. At the time of the study, the preschool program for rural, four-year-olds had been operating for 12 years serving 32 children each year. The district preschool program was funded through a federal program, Title 1 (later called Chapter I,) Elementary Secondary Education Act (ESCE) of 1965, Public Law 89-10, on the basis of the participation of the district's enrollment in the free and reduced-price lunch program.

The current study was designed to determine whether children exhibited significant differences in the number of special education placements, in the frequency of grade level retentions, or in educational achievement as measured by math and reading scores on the Iowa Tests of Basic Skills as a result of the program for rural four-year-old students.

The data on children who attended preschool and the control group members was obtained from the cumulative files maintained in the administrative offices. The data included the preschool entrance scores of

students on norm-referenced screening instruments, whether or not students participated in special education programs or were retained in grade, and math and reading scores of children at grade levels 3-6.

The preschool screening tests yielded scores in percentile levels for vocabulary as measured by the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981) .

Eighty children attended a preschool in the local school district while 50 of their age mates did not attend preschool. From the group of 80 children, 30 were randomly selected. Likewise from the 50 children who had not attended preschool, 30 were randomly selected. Analysis was conducted on data acquired for 60 subjects over an 11 year period. Half of the subjects had attended a preschool program in the district prior to their enrollment in kindergarten (n=30); the other half received no early program intervention (n=30).

The data had been recorded by the school district personnel beginning in 1980. Three waves of preschool children were identified; 20 in 1980, 19 in 1982, and 21 in 1983. Table 1 shows the number of subjects in each wave participating in the study. In 1990, data from the Chapter I records and the students' cumulative folder were acquired by the researcher to examine the hypotheses of this study.

The experimental group attended the preschool program for one year; the control group had no formalized instruction before kindergarten. There was

Table 1

Number of Subjects Participating in the Three Waves

Year	Experimental group	Control group	Total
1980	7	13	20
1982	12	7	19
1983	11	10	21
Total	30	30	60

no significant difference in subjects age at entry level. The subjects continued their progression through the elementary school in which they entered kindergarten. In 1990, data relative to special education placement, retention, math and reading achievement were examined for each individual in the study. Table 2 illustrates the chronological order of events for the three waves of subjects in this study. Table 3 illustrates the types of data collected for the three waves of subjects in this study and the particular grade levels at which data were collected.

Pretest Measures

The Peabody Picture Vocabulary Test-Revised (PPVT-R) was used by the district to measure children's understanding of receptive language. In addition, children's ages in months were recorded. A comparison of the means of the two groups indicated they were equal in vocabulary knowledge (t (58)= -1.85). A comparison of subjects' ages in months at the outset of the study also indicated equal groups (t (58)= -1.61). Therefore, at the beginning of the study, the two groups were considered comparable and did not differ in age or receptive language knowledge. (See Table 4.)

Program Intervention

The preschool program was developed for four-year-old children living in a rural Iowa community school district of 3300 residents which served approximately 700 pupils in an elementary and junior-senior high school. The program was developed to provide early childhood education to help children succeed in kindergarten; participation in the program was voluntary. After the

Table 2

Schedule (year) of Data Collection and Intervention

	Pretest Data		Posttest Data		
	Lang score	Age comp.	Preschool intervent.	Math/Read achiev. tests	Retention/ special ed.
Wave I (n=20)	1980	1980	1980	1984-87	1990
Wave II (n=19)	1982	1982	1982	1986-89	1990
Wave III (n=21)	1983	1983	1983	1987-90	1990

Table 3

Data Collected for Subjects in the Study

	Wave I (n=20)		Wave II (n=19)		Wave III (n=21)	
	Exper (n=7)	Control (n=13)	Exper (n=12)	Control (n=7)	Exper (n=11)	Control (n=10)
Pretest						
Language	7	13	12	7	11	10
Age	7	13	12	7	11	10
Posttest						
3rd gr Math	7	8	12	7	11	9
3rd gr Read	7	8	12	7	11	8
4th gr Math	7	8	12	7	11	9
4th gr Read	7	8	12	7	11	8
5th gr Math	7	8	12	7	6	3
5th gr Read	7	8	12	7	6	3
6th gr Math	5	1	3	5	8	9
6th gr Read	5	1	3	5	8	7
Retention	7	13	12	7	11	10
Spec Educ	7	13	12	7	11	10

Table 4

Entry Scores T-tests

Variable	n	Mean	SD	t	p
Age of enrollment					
Preschool	30	53.93	4.56	-1.61	.11
No presch	30	55.83	4.60		
PPVT-R					
Preschool	29	45.93	29.05	-1.85	.07
No presch	29	59.31	25.80		

*$p < .05$.

screening, parents were invited to place their children in the program. When the students were enrolled in preschool, plans were made to group the students' areas of need to determine program objectives. Teachers kept individual folders on each child to record progress on objectives and evaluations. Students in rural areas were bused to and from the program which was located in the elementary building.

The program ran 5 days per week and employed a certificated instructor in early childhood and a paraprofessional, maintaining a ratio of 2 adults per 16 children. Each child attended classes four half-days per week, Monday through Thursday, for 3 hours per day for at least 30 weeks of the year. On Fridays, the teacher and paraprofessional conducted program planning and review, conferred with parents, held staff meetings with resource personnel, and pursued further staff development training. The program operated two sessions daily, with instruction being given to no more than 16 children per session. The school year for the preschool children began October 1 and patterned the regular elementary school calendar, including inservice and clerical days, holidays, and vacation. Teachers set aside two weeks during the year for parent conferences.

Program objectives addressed the development of the whole child--mental, social, physical, and emotional. (See Appendix A.) The program provided individual and group experiences in language, story-telling, listening, music, field trips, and art activities. The program provided instruction in gross motor skills using the playground or gymnasium for large muscle activities such

as running, skipping, hopping, and group games. Art activities, crafts, and table games using paints, scissors, and pencils were conducted in the classroom to help develop fine motor activities. Children were introduced to the alphabet through visual and story representations of letters. Blocks and manipulatives were used to teach beginning math skills. Teachers encouraged appropriate social interactions and provided language experiences through stories, conversations, songs and finger plays. Opportunities for 'free play' in which children were allowed to choose from among a variety of activities, materials, and equipment developed group and individual socialization skills. The instructor and paraprofessional interacted with the children through questions to stimulate discussion and thinking. Teachers kept individual folders for each child and recorded individual progress on the selected objectives.

At the beginning of each year, students were individually evaluated by means of a checklist. (See Appendix B.) On the basis of the individual results in the initial evaluation, the preschool curriuclum and activities for the groups were compiled and organized to help the children develop the skills which were needed. The baseline data was shared with the parent or parents at an entry-level conference; the teacher marked the child's progress in skill development on the checklist. The information became the basis of periodic conferences with the parents during the year.

Parental involvement was part of the program; the teachers scheduled some home visits with parents to evaluate the child's progress. Parent participation activities also included at-school workshops in which the

preschool teacher presented films, or introduced community resources and personnel.

Posttests Measures

The district gave Iowa Tests of Basic Skills (ITBS) to subjects in years 1984-1990. As viewed in Table 3, not all subjects were administered the battery of tests. In reviewing the individual cumulative files, there was no consistent pattern of test administration. For example, at grades 3 and 4, 54 of 60 subjects were compared on math scores, 30 experimental and 24 controls. Likewise at grades 3 and 4, 53 of 60 subjects were compared on reading scores, 30 experimental and 23 controls. By grade 6, 31 of 60 subjects were compared in math scores and 29 of 60 subjects were compared in reading scores.

Nonetheless, the district did administer the ITBS battery of tests each year to most of the 60 subjects. The scores were recorded in the students' cumulative folders. In 1990, the students' percentile scores in reading and math were acquired and compared between groups.

The district also recorded special education placement data staffing information in the cumulative files of subjects each year. Retention of all individual students was also recorded in the cumulative files. All information was compared between groups to examine the effects of preschool intervention. The between groups comparison was conducted using chi-square analysis to test for differences in grade retention and placement in special education programs. Children who received help in special education classes were

considered "placed" and awarded a 1; children who received no help were considered "not placed" and awarded a 2. Children who were retained in the same grade for a second year were considered "retained" and awarded a 1; otherwise, they were classified "not retained" and awarded a 2.

Subjects

Sixty children who were 4 years old comprised the three waves of subjects. Both the experimental and control groups consisted of 30 subjects each. There were 14 males and 16 females in the experimental group. There were 18 males and 12 females in the control group. The subjects in the experimental group completed a preschool experience, and elementary grades 1-6. The subjects in the control group received no preschool experience but were followed from grades 1-6 in the same elementary school.

At the beginning of the study, the mean age of the experimental group was 53.9 months (SD=4.6) and the mean age of the control group was 55.8 (SD=4.6). As mentioned earlier, there was no difference in age in months between the two groups (n=60), t (58)= -1.61. Likewise, the two groups were considered equal in their understanding of vocabulary. The average language score for the experimental group was 45.93 (SD=29.05); the average language score for the control group was 59.31 (SD=25.8).

The subjects in this study were representative of white lower-middle class children living in rural Iowa in 1980. The Department of Education statistics (1980) gave a general picture of the economic and ethnic conditions of the residents in this school district. Residents of the district had a per capita

personal income of $12,000, compared to a state-wide average of $14,000. According to district census figures in 1980, 64 families with young children below age 5 fell above the poverty level while 7 families fell below (Iowa Department of Education, 1980). There were no minority children residing in the district in 1980. Hence, the sample of 60 children are believed to represent an all white, lower-middle class stratum in rural Iowa.

Materials

Pretest

The Peabody Picture Vocabulary Test-Revised (PPVT-R) is an individually administered, norm-referenced test of receptive vocabulary. The test contains items that increase in difficulty. It is administered to preschool children individually to determine verbal intelligence by measuring a child's receptive vocabulary. Children are shown a card with four black and white drawings. The examiner says a word, such as "whale." The child must point to the drawing that best matches this word. The test is designed for children as young as ages 2 1/2. Administration time is approximately 10 to 20 minutes. Raw scores can be converted to age referenced norms.

Lloyd M. Dunn and Leota M. Dunn constructed the first edition of the PPVT in the late 1950s and marketed the revised edition (PPVT-R) in 1980 to provide a measure of the subject's receptive vocabulary. The standardization process involved 4,200 children and young people ages 2 years, 6 months through 18 years, 11 months, and 828 adults ages 19 through 40. Samples of children and adults were drawn from various locations in the United States,

represented various economic levels, and different size communities (Dunn & Dunn, 1981).

The split-half reliability coefficients was .70 for 4-6 to 4-11 year old children on Form L. The alternate form reliability coefficient on immediate retest was .75; delayed retest reliability coefficient was .77. The median split-half reliability was .82 (Keyser & Sweetland, 1987). Hence, the PPVT-R test provides a moderately reliable measure.

Post-Test

According to the test manuals, the Iowa Tests of Basic Skills (ITBS) provides for the comprehensive measurement of growth in the fundamental skills: listening, word analysis, vocabulary, reading, language, work study, and mathematics. The skills represented in the tests were determined to be crucial in educational development because they indicated, for the most part, the extent to which pupils can profit from later instruction. Periodic, reliable measurement of the development of these skills was determined to be essential for effective individualization of instruction, enlightened educational guidance, and evaluation of the effectiveness of instructional procedures (Hieronymus & Hoover, 1986).

Test makers reported that the commonly used principles in the validation of test content have been applied in the preparation of individual test items. The authors analyzed over 40,000 items in the construction of the tests. Internal consistency reliability was given in tables for each level in ranges from .66 to .97 based on the Kuder-Richardson Formula 20 procedures. The mean (Grades

3-8) reliability coefficients comparison ranged from .81 to .88. Efforts were made to assure fairness on socioeconomic, sex, and cultural bias factors (Hieronymus & Hoover, 1986).

Analyses

The analyses of the data were conducted by utilizing the SPSS package at Drake University in Des Moines, Iowa. Frequencies for all variables were conducted. T-tests were also conducted to measure the differences between the groups on the Peabody Picture Vocabulary Test-Revised used in the pretest and age in months.

Chi-square analyses were used to test the differences in grade retention and placement in special education programs between the two groups. T-tests were also conducted to measure significant differences in academic performance of reading and mathematics.

Chapter 4

ANALYSIS OF THE DATA

The purposes of the current study was to examine the long-term effects of one year of preschool offered to rural four-year-old children on placement in special education programs, retention in grade, and measures in educational achievement.

First, one of the purposes of the current study was to investigate the effect of preschool education on the number of special education services children received during grades 1-6. Cumulative files were reviewed for all subjects in the study for the years 1980 through 1990.

Hypothesis 1 that children who received a preschool education would demonstrate a fewer number of special education placements as compared to control group children during grades 1-6 was rejected. Quite unexpectedly, children who attended preschool received more special education services than children who did not attend.

In the chi-square test for independence, the researcher found a significant association between variables, preschool participation and placement in special education programs χ (1, $\underline{N}$ = 60) = 5.45, $\underline{p} < .05$. The tabled chi-square value with 1 degree of freedom was 3.84. Thirty percent of the children ($\underline{n}$= 30) who participated in preschool education in a rural district were placed in special education programs; 6.7% of the children ($\underline{n}$= 30) who

did not participate in any formal early education programs were placed in special education programs. There was a positive correlation between preschool participation and being placed in special education programs. (See Table 5.) These findings were not expected. Many studies (Asano, 1986; Austin Independent School District, 1984; Berrueta-Clement et al., 1984; Consortium for Longitudinal Studies, 1983; Foundation for Human Service Studies, 1980; Lazar et al., 1982; Slavin, Karweit, & Wasik, 1993; Sevigny, 1987; University of the State of New York, 1982) have reported that special education placement is decreased when children are given the opportunity to attend preschool. Nonetheless, the results were highly significant and the null hypothesis was rejected. (See Table 5.)

Secondly regarding hypothesis 2, the current study was also designed to examine the effects of preschool education on the frequency of grade retention from first through sixth grades. There was a statistically significant difference between the numbers of children who participated in preschool and those who did not. The hypothesis that the distribution of preschool/nonpreschool subjects is independent of retention was rejected at the .01 level of significance (χ = 7.93, df = 1, $p < .05$). Of the children (n= 30) who participated in preschool education in a rural district, 23.3% were retained in the same grade level two years; no control students (n= 30) were retained. (See Table 6.) These findings were also not expected. Many studies (Asano, 1986; Austin Independent School District, 1984; Beller, 1983; Consortium for Longitudinal Studies, 1983;

Table 5

Chi-square analysis of participation by special education

	Special ed	No program	Total	Percent
Preschool 1	9	21	30	30
No preschool 2	2	28	30	6.7
Total	11	49	60	36.7

	Value	df	p
	5.45	1	.02*

*$p < .05$.

Table 6

Chi-square analysis of participation by retention

	Retained	Not ret.	Total	Percent
Preschool 1	7	23	30	23
No preschool 2	0	30	30	0
Total	7	53	60	23

	Value	df	p
	7.93	1	.01*

*$p < .05$.

Foundation for Human Service Studies, 1980; Lazar et al., 1982; Slavin, Karweit, & Wasik, 1993) have reported that retention is decreased when children are given the opportunity to attend preschool. Only one study (Buerretta-Clement et al., 1984) is corroborated by these findings.

Third, it was hypothesized that children who received preschool education would demonstrate no significant difference in reading achievement during elementary grades 3-6. A t-test was used to test the hypothesis at third grade level. (t (52) = -1.50, $p < .05$.) The means and standard deviations are summarized in Table 7. No significant difference was found between the preschool and the nonpreschool group in reading achievement at third grade.

At fourth grade level, there was a significant difference in mean achievement scores between groups, t(52) = -2.13, $p = .04$ in the test for significance. (See Table 7.) The difference favored the nonpreschool group at that level. However, at the fifth grade level, there was no significant difference between groups, t(42) = -1.84, $p = .07$. In the groups at fifth grade level, there were five less students in each group. At sixth grade level, there also was no significant difference between groups, t (28) = - .75, $p = .46$. By sixth grade, the numbers of students who completed the ITBS reading achievement test had decreased to about 50% of the original sample, even though the students were still enrolled in the elementary school. However, the t-test is still robust for the smaller number included in the sample.

Table 7

Reading achievement as assessed by ITBS

Group	n	M	SD	t value (separate)	p
Reading3rd					
Preschool	30	50.33	25.89	-1.50	.14
No presch	23	60.91	25.20		
Reading 4th					
Preschool	30	56.17	24.16	-2.13	.04*
No presch	23	69.04	19.81		
Reading 5th					
Preschool	25	53.52	25.44	-1.84	.07
No presch	18	66.11	19.52		
Reading 6th					
Preschool	16	50.36	23.93	-.75	.46
No presch	13	56.88	22.51		

*$p < .05$.

There was no fixed expectation as to what the results of the study would determine. The results did not correspond to the results of studies conducted by some researchers (Jones, 1988; Miller & Bizzell, 1983b; Miller & Bizzell, 1984; Sevigny, 1987; Stallings, 1987; University of the State of New York, 1982). However, other researchers (Beller, 1983; Collins, 1984; Foundation for Human Service Studies, 1980; Gray et al., 1982; Helmich, 1985; McKinnon, 1982; Moore, 1976; Revicki & Self, 1980) found no marked differences in academic achievement as a result of one year of preschool education.

Fourth, it was hypothesized that children who received preschool education demonstrated no significant difference in math achievement during elementary grades 3-6. A t-test was used to test the hypothesis in math. The means and standard deviations are summarized in Table 8 with the *t* values. No significant difference was found when comparing group means. The national percentile math scores on the Iowa Tests of Basic Skills in grades 3, 4, 5, and 6 were used for the comparison. (See Table 8.) Therefore, the results indicate that the groups were equal in their math achievement regardless of whether or not they received preschool.

Further Analysis

To determine whether participation and the PPVT-R in combination had a significant linear relationship to reading which could not be accounted for in the t-test, a further analysis was conducted. Using the MANOVA, the researcher tested whether children who received preschool education demonstrated a significant linear relationship in the combination of participation and the PPVT-R

Table 8

Math achievement as assessed by ITBS

Group	n	M	SD	t value (separate)	p
Math3rd					
Preschool	30	45.73	27.14	-1.56	.13
No presch	24	56.75	29.03		
Math 4th					
Preschool	30	58.67	26.60	-1.08	.28
No presch	24	65.58	20.33		
Math 5th					
Preschool	25	55.64	24.01	-1.00	.32
No presch	18	62.94	23.41		
Math 6th					
Preschool	16	47.88	23.75	-1.20	.24
No presch	15	57.93	23.09		

*$p < .05$.

scores to the reading scores during elementary grades 3-6.

Using participation as the independent variable and vocabulary as the covariate, the researcher found a significant linear relationship between the combination of participation and preschool screening score on the PPVT-R with later reading scores grades 3-6. The *F* value was significant at grades 3-6. (See Table 9.) The significance of the *t* value at grade 4 was expected based on the PPVT-R score at the preschool level, given the probability that variance would be evident at some point.

In the comparison of the preschool and control groups on the preschool screening instrument, PPVT-R, the researcher found ($p = .069$). The mean score on the PPVT-R for the preschool group ($n = 30$) was 45.9; the mean score on the PPVT-R for the control group ($n = 30$) was 59.3; thus some difference would be expected at some grade level in the achievement level.

In the review of the PPVT-R cited in chapter 3, Umberger (Keyser & Sweetland, 1987) indicated that the PPVT-R provided a measure of scholastic aptitude, a predictor of school success, and a measure of achievement in the acquisition of the English vocabulary. The reliability coefficient on PPVT-R, Form L was .70 for four-year-old children. An expected significant value of F ($p = .05$) was observed in an analysis of covariance to examine the t-test of significance observed in fourth grade reading. Therefore, the rejection of the hypothesis in reading at grade 4 could be explained by the linear relationship of

Table 9

Correlations between covariates and predicted dependent variables on reading using MANOVA

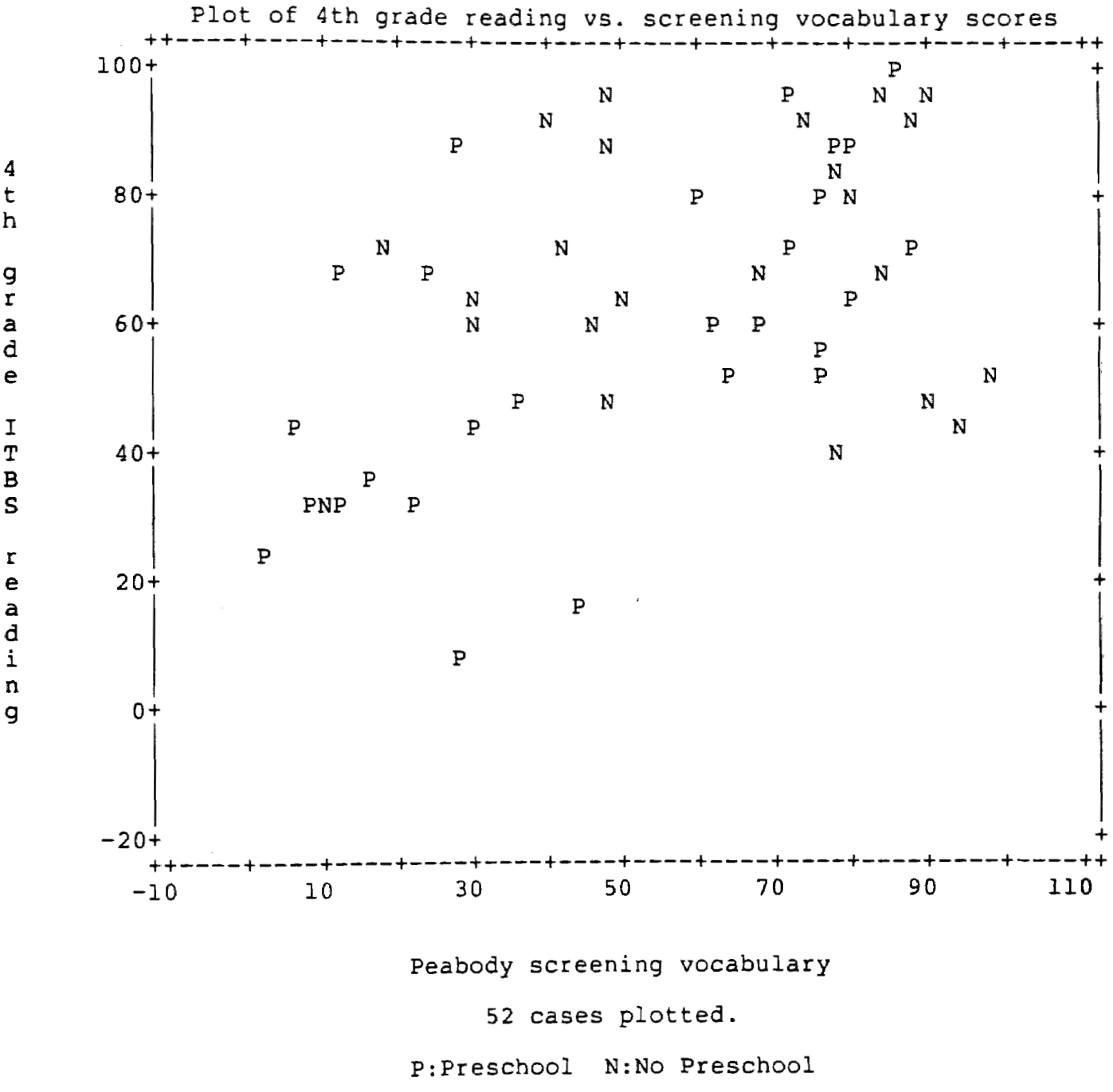
Variable	df	M	F value	Sig of F	Sig of t
Reading 3					
Within cells	49	626.60			
Regression	1	2583.36	4.12	.05	.05*
Participation	1	586.90	.94	.34	
Reading 4					
Within cells	49	399.16			
Regression	1	5794.21	14.52	.000	.000*
Participation	1	663.24	1.66	.20	
Reading 5					
Within cells	40	459.26			
Regression	1	3639.56	7.92	.01	.01*
Participation	1	389.97	.85	.36	
Reading 6					
Within cells	25	490.20			
Regression	1	2376.65	4.85	.04	.04*
Participation	1	127.50	.26	.62	

*$p < .05$.

the PPVT-R and the reading score, calling into question any significance on the t-test at that point. The significant difference between the groups in fourth grade reading was observed because the vocabulary scores were not considered. When scores were considered, the difference was not significant.

To illustrate the covariance of the preschool PPVT-R vocabulary scores and fourth grade reading, a plot of the scores was constructed on the SPSS. By dividing the plot into quartiles, the reader can observe the pattern of preschool (P) and no preschool (N) scores as the scores were plotted. (See Plot of 4th grade reading vs. screening vocabulary scores in Figure 1.) The upper right-hand corner indicates 13 preschool students and 12 nonpreschool students who had scores above 50 percentile on the PPVT-R screening instrument and above 40 percentile on the fourth grade ITBS reading test. There was a direct correlation between scores on the instruments. In the opposite lower left quartile of the plot, there were 7 preschool students and 1 nonpreschool student who had scores below 40 percentile on the ITBS test and below 50 percentile on the PPVT-R screening instrument. The plot demonstrates that more preschool students had low scores on both instruments when compared to nonpreschool students. Nine nonpreschool students had low scores on the PPVT-R screening instruments but had high scores on the ITBS reading test; only six preschool students showed a similar pattern. As observed on the plot, it would appear that more nonpreschool students than preschool students were successful in reading at fourth grade level, thus the variance was significant at that level. However, the advantage was not maintained in fifth grade which

Figure 1


Plot of 4th grade reading vs. screening vocabulary scores
4th grade ITBS reading
100+
80+
60+
40+
20+
0+
-20+
-10
10
30
50
70
90
110
Peabody screening vocabulary
52 cases plotted.
P:Preschool N:No Preschool

concurs with researchers' findings that differences between groups evens out in later grade levels (Gray et al., 1982; Casto & Mastropieri, 1986).

To determine whether participation and the PPVT-R in combination had a significant linear relationship to math scores which could not be accounted for in the t-test, a further analysis on math scores was conducted. Using the MANOVA, the researcher tested whether children who received preschool education demonstrated a significant linear relationship in the combination of participation and the PPVT-R scores to the math scores during elementary grades 3-6.

In the covariate analysis using participation as the independent variable and vocabulary as the covariate, a significant linear relationship between the combination of participation and preschool screening score on the PPVT-R with later math scores grades 3-6 was observed. (See Table 10.) The F value was significant at grades 3-6. (See Table 10.) The findings support Umberger's report (Keyser & Sweetland, 1987) that the PPVT-R was a predictor of school success. In further analysis, children who received preschool education demonstrated a significant linear relationship of the combination of participation and PPVT-R scores to math scores.

Table 10

Correlations between covariates and predicted dependent variables on math using MANOVA

Variable	df	M	F value	Sig of F	Sig of t
Math 3					
Within cells	50	677.44			
Regression	1	6051.75	8.93	.004	.004*
Participation	1	829.85	1.22	.27	
Math 4					
Within cells	50	498.18			
Regression	1	4161.66	8.35	.01	.01*
Participation	1	194.69	.39	.54	
Math 5					
Within cells	40	436.23			
Regression	1	5403.52	13.07	.001	.001*
Participation	1	37.79	.09	.77	
Math 6					
Within cells	27	394.38			
Regression	1	3966.32	10.06	.004	.004*
Participation	1	764.15	1.94	.18	

*$p < .05$.

Summary

The researcher has presented the tabulations of placement in special education programs, recordings of retention in grade level, and test scores of rural students. The students (n= 30) who had participated in a preschool program for rural four-year-old children were compared to similar information on students (n= 30) who did not participate in the program. Chi-square analyses and t-tests for correlated data were computed to compare information for significant differences.

Special Education

The result of the analysis for placement in special education programs was significant and favored the preschool group. That is, there was a significant difference in the number of students who had participated in preschool enrolled in special education classes between grades 1-6 when compared to controls. The results were unexpected and did not correspond to the data in the research on preschool education.

Grade Retention

There was a significant difference in the number of students who had participated in preschool retained in grade level when compared to controls. The results were unexpected and did not correspond to the data in the research on preschool education. Grade retention in the preschool group was significantly higher in grades 1-6 when compared to controls.

Reading

In the analysis of reading scores, a significant difference at grade 4 level ($p < .05$) was found. The hypothesis that there were no significant difference in groups when compared on reading scores was confirmed at grades 3, 5, and 6 and rejected by the t-test analysis at grade 4 only. At fourth grade level, the preschool group, was significantly lower in reading scores.

Math

No significant difference between preschool and control groups was found as a result of the analysis of the t-test on math scores. The hypothesis that there was no significant difference in preschool and control groups when compared on math scores was supported by the t-test analysis.

Using the MANOVA on the SPSS, the researcher conducted further analysis on reading scores with participation in preschool education as the independent variable and the PPVT-R score as the covariate with reading scores, in order to observe interaction effects of the variables. A significant linear relationship between the PPVT-R scores and reading scores ($p < .05$) was found. The significant difference between preschool and control groups when compared on the reading score at grade 4 was observed because the PPVT-R vocabulary score in the preschool screening test was not considered in the primary analysis. The hypothesis addressing difference in reading score was not rejected at any level. Using the MANOVA on the SPSS, the researcher conducted further analysis with participation as the independent variable and the PPVT-R score as the covariate with math scores, to observe interaction

effects of the variables. There was a significant linear relationship between the combination of preschool participation and PPVT-R scores with math scores ($p < .05$).

Chapter 5

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

The purpose of the study was to determine whether the children (n= 30) who participated in the preschool program for rural four-year-old children differed significantly from control children (n= 30) in special education placement, retention in grade, or educational achievement in math and reading.

Summary

This study was designed to investigate whether a sample of 30 students who participated in a preschool program for rural four-year-old children demonstrated significant differences at elementary grades 1-6, from a sample of 30 children who did not participate in any formal early education program, but who were educated in the same elementary school. Descriptive statistics were analyzed using the chi-square and t-test procedures.

After the sample was selected, the researcher used statistical analysis of the initial scores on the screening instrument, Peabody Picture Vocabulary Tests-Revised (PPVT-R), to examine whether there was a significant difference in the comparison groups chosen for the study. (See Table 4.) In a comparison of the means of the two groups no significant difference was found in vocabulary knowledge as evaluated by the PPVT-R screening instrument.

The measures used for analysis were the tabulations of placement in special education programs, tabulations of retention in grade level, and scores

from the reading and mathematics subtests of the Iowa Tests of Basic Skills administered to students grades 3-6. Chi-square analyses were used to determine if the two groups of children differed significantly in placement in special education programs or retention in elementary grades 1-6. Using t-tests, the math scores and reading scores obtained for the two groups of children at grade levels 3-6 were compared for significant differences.

Conclusions

Chi-square analysis was applied to the tabulations of placement in special education programs in order to test the following hypothesis: Children who received a preschool education would demonstrate a fewer number of special education placements as compared to control group children during grades 1-6.

A significant difference in placement was observed; children who participated in preschool education were placed in special education programs more frequently than children who did not participate. There was a positive correlation between students who attended preschool and being placed in special education programs. The results were unexpected.

As a result of the study, some questions were raised as to whether teachers in the district attached a stigma to participation in the preschool program. Children who were identified early for special placement in the preschool program may have been negatively viewed as children with less innate abilities or less capability for learning new skills. Since the preschool program was housed in a public school setting with higher functioning

elementary children, elementary school teachers may have received an initial, non-favorable impression of the preschool children resulting in differential treatment and less opportunity for skills acquisition.

It is also possible that the early screening test was not discriminatory of subtle factors that surfaced as the children matured. Lichtenstein and Ireton (1984) questioned whether children with developmental problems could be accurately identified with screening instruments. In questioning the technical excellence of 200 screening instruments developed in the years 1960-1980, Paget and Bracken (1983) found the general ratings to be poor or fair. Shepard and Smith (1986) reported that none of the existing readiness instruments was sufficiently accurate or demonstrated high correlations with later school success.

Because of low ITBS scores, poor classroom performance, and the lack of math and/or reading skills, children were referred for further evaluation of ability and skills levels; sufficient deficits were observed for the children to be placed in special education. More investigation of the preschool program, of elementary teachers' perceptions of the program, and of classroom adjustments to meet students' academic needs in grades 1-3 is needed to identify factors which may have contributed to special education placement.

The current study was also designed to examine the effects of preschool education on the frequency of grade retention to test whether children who received preschool education demonstrated a significant difference in the frequency of grade retention during elementary grades 1-6. There was a

statistically significant difference between the numbers of children who participated in preschool and those who did not. A significant difference was found in the frequency of retention that occurred between experimental and control groups; children who participated in preschool education were retained more than children who did not participate.

After examining the results of the study, some questions were raised as to whether teachers in the district attached a stigma to participation in the preschool program. Since the preschool program was housed in a public school setting with higher functioning elementary children, the teachers' first impression of the preschool children may have been non-favorable. The impression may have caused teachers to lower expectations of the children resulting in less interaction and skills acquisition. Children with lower skills were recommended for retention in grade according to district policy despite numerous studies that find no beneficial results of retention in grade (Nason, 1991; Shepard & Smith, 1986).

The results of the study in relation to special education do not correspond to findings reported by Berrueta-Clement et al. (1984) and Gray et al. (1982). Both studies showed similar patterns of effects on reduced referral rates to special education.

However, the sample in the present study and the sample in Berrueta-Clement et al. study differ in some aspects. The Berrueta-Clement et al. sample contained children from poverty; the children in this study were from lower middle-class homes. The Berrueta-Clement et al., 1984 sample had lower IQ

scores than the sample in the current study; IQ levels were unavailable for all 60 children in the current sample, but PPVT-R scores indicated the groups were average in ability. The curriculum in the Berrueta-Clement et al. (1984) study was carefully controlled with high correlation to later grade level expectations. There is no indication that the curriculum in the present study was carefully controlled or had high correlation to later grade level expectations. (See Appendix B.)

Collins (1984) indicated that the most needy children benefitted more from Head Start programs. Needy children were identified as those whose mothers had tenth grade or less education, were from single parent households, were handicapped, were from minority groups, and had low cognitive scores. The sample in the current study did not fit those criteria.

The district may have not been aware of the research on retention. Bossing and Brien (1980) and Neill and Medina (1989) reported that students who are retained are 20% to 40% more likely to drop out of school. Shepard and Smith (1986) reported that students rated retention as the third most stressful event in life, superseded only by blindness and the death of a family member. Children were apparently retained because teachers felt that retention would be advantageous to academic progress. Researchers have reported that retained pupils only make about 6 months progress compared to academic gains of 8 to 12 months for those students who are promoted but were recommended for retention (Nason, 1991).

T-tests were applied to the differences between means of the group

scores in reading to test the null hypothesis: Children who received preschool education would demonstrate no significant difference in reading achievement during elementary grades 3-6 as compared to children who did not attend preschool. No significant difference between preschool and control groups in reading scores at grade levels 3, 5, and 6 were found. There was a significant difference between groups in reading scores at grade 4, but a further analysis using the MANOVA on the SPSS demonstrated that there was a significant linear relationship to the combination of participation and initial screening scores on the PPVT-R instrument at fourth grade level. However, there were no significant differences at grades 5 and 6. The data at grades 5 and 6 corresponded to research by Shepard and Smith (1986) that achievement after age 9 evens out, and that retention in the same grade is not beneficial.

In a comparison of numbers used in the t-test analysis, 51 of the 60 subjects at grade 3 and 4 were administered the ITBS reading test. At grade 5, the ITBS reading test was administered to 41 of the 60 students. No explanation was apparent in the review of the students' files as why scores were not available for the other students; scores for special education and retained students were available and included, ruling out exemption of those groups from the test.

T-tests were applied to the differences between means of the group scores on subtests in math to test the null hypothesis: Children who received preschool education would demonstrate no significant difference in math achievement during elementary grades 3-6 as compared to children who did

not attend preschool. The hypothesis in math was confirmed for the groups.

The study compared rural four-year-old children who participated in preschool with controls on tabulations of placement in special education programs, tabulations of retention in grade, math achievement, and reading achievement.

In summary, the results of the study are that children who participated in a preschool program for rural four-year-old children were placed in special education programs and retained more often than children who did not participate. This finding does not correspond to the results of prior studies reported in chapter two as conducted by Asano (1986), Austin Independent School District (1984), Darlington et al. (1980a), Royce et al. (1983), Foundation for Human Service Studies (1980), Helmich (1985), Lazar et al. (1982), McKey et al. (1989), Sevigny (1987), Stallings (1987), and University of the State of New York (1982).

Most of the research in these studies (Asano, 1986; Austin Independent School District, 1984; Berrueta-Clement et al., 1984; Darlington et al., 1980a; Royce et al., 1983; Foundation for Human Service Studies, 1980; Helmich, 1985; Jones, 1988; Lazar et al., 1982; McKey et al., 1989; Sevigny, 1987; Stallings, 1987; and University of the State of New York, 1982) investigated samples of low-income and low-ability children. The present sample included children from low-middle class homes; although the IQ was not reported in the study, scores on the PPVT-R screening test reported both groups to be within the average range in verbal intelligence.

Some of the studies were carefully controlled and had specified curriculum which was closely related to later academic expectations. There is no indication in the present study that curriculum expectations were correlated to later grade curriculum or expectations. The curriculum in the current study followed a traditional, developmental approach. (See Appendix A.) However, given the results of investigation of various preschool programs by Karweit (1989), no particular preschool model appears to be more effective.

Children who participated in a preschool program for rural four-year-old children exhibited no significant difference in math scores in grades 3-6 and reading subtests scores in grades 3, 5, and 6 when compared to controls. The results corresponded to results found in other research projects conducted by Austin Independent School District, 1984; Berrueta-Clement et al., 1984; Jones, 1988; Miller & Bizzell, 1983b; Royce et al., 1983; Sevigny, 1987; Stallings, 1987; and other researchers (Darlington et al., 1980a; Helmich, 1985; and University of the State of New York, 1982). There was no apparent long-term effect on educational achievement due to participation in the preschool program for rural four-year-old children.

The conclusions of the study have implications for school personnel who are, or will be administering a pre-kindergarten program for rural four-year-old children; further research is needed.

Since the present study did not correspond to previous studies on retention and placement in special education programs, further evaluation of programs for rural four-year-old children is needed for comparison in larger

samples. Few program studies on long-standing rural preschools were found in a database search in 1990. None of the studies analyzed longitudinal data from public preschool programs; the studies reported rural programs in which approach and content were not similiar to the program in the present study.

There was no indication that the goals of the current program were to reduce retention and/or special education placement. The objectives of the program in the current study are listed in Appendix A. Stanley (1971) reported that programming for survival skills determines whether academic success is achieved. Stanley identified survival skills as sitting quietly, following directions, speaking clearly, being attentive, pleasing the teacher, and shunning trouble makers. If the aim of a preschool program is developmental then Stanley suggested that social, emotional and intellectual development were considered more important than good study habits and formal curriculum. A review of the objectives in the current program (see Appendix A) suggests that it was developmental in nature. Therefore, significant academic results would not be expected.

A further longitudinal study should be conducted of students who participated in the study to determine whether any significant difference between groups can be found in later grade levels relating to educational achievement. The significant difference between groups in special education placement and retention was contrary to results found in other studies; a further longitudinal study should be conducted to determine whether special education placement and retention of students in grade effects graduation rates of the

groups.

The district's retention policies and practices should be evaluated in relation to current studies on the long-term effectiveness of retention for students. Retention was not reported to produce any significant benefits related to academic achievement. While students who are promoted make academic gains of 8 to 12 months, retained pupils only make about 6 months progress. Differences in achievement scores of retained students and promoted students usually decrease by age 13, and are nonexistent by age 17 (Nason, 1991). When a student repeats a grade, the probability of drop-out increases by 20 to 40 percent (Neill & Medina, 1989). Children who are failed in their first two years have reduced changes of completing high school (Shepard & Smith, 1986).

Given that this study did not support previous studies cited on the variables of retention and placement in special education programs, further evaluation of the district's program goals for preschool may be warranted. More investigation of the curriculum and goals in the preschool program, teachers' perceptions of the program, and the classroom adjustments to meet students' academic needs are needed to identify factors which may have contributed to retention and/or special education placement. There may be a need for vertical articulation of preschool goals with elementary goals. There may also be a need for preschool and elementary teachers in the district to gain understanding and support for one another in order to provide the optimum climate and curriculum for young children.

Since a limited amount of the available data in district files on the preschool program was used in the study, further investigation of the data is needed to extend the present study to examine program components. Given that the results did not correlate to the preschool studies reviewed in Chapter Two, the components of the district's preschool program should be compared to the components in programs which demonstrated less special education placement and retention of students. The common components of successful programs were reported to be intensive staff training, constant program supervision, periodic evaluation, continued support for program participants, explicit goals for the program, and use of controls to conduct comparisons with participants (Lazar et al., 1977).

Slavin, Karweit, and Wasik (1993) indicated that attendance at a high-quality preschool program has long-term benefits for children; there was no evaluation of quality in the present study. NAEYP (1986) has researched and outlined guidelines for high quality preschool programs which address physical, social, emotional, and cognitive development of young children. Further research could evaluate whether the program cited in this research contains the components outlined by NAEYP (1986). Slavin et al. (1993) indicated that a one-year program, whatever its quality could not be expected to solve all the problems of at-risk children.

There is a need for more empirical studies of alternative ways to combine preschool and other services for young children, particularly in rural areas. Slavin et al. (1993) indicated that intensive intervention over a period of several

years is needed to produce lasting effects of cognitive functioning. Slavin et al. (1993) further indicated that to ensure the success of all at-risk students takes a greater financial investment than the state and federal governments are currently willing to make. Futrell (1987) indicated that a realistic solution included using the school as a local center for all the social services required by the surrounding neighborhood for young children, for example, day care, recreation, socialization, health, and nutrition.

Finally, there is a need for those who are conducting programs for children to keep accurate and systematic records of data for evaluation of the programs. The district's retention of 12 years of preschool records provided information for the limited scope of the present study; complete records of programs allow more intense investigation of effectiveness. Given the current budgetary constraints for educational programs, each program should be scrutinized to ascertain whether there is a significant difference as a result of the program.

References

Adams, V. A. (1988). *A guide to program development for kindergarten, Part I--A preview.* Hartford: Connecticut State Department of Education.

Archambo, J. P., & Briscoe, M. E. (1970). *Rural child care project, 1969-1970 research evaluation..* Volume II: Hypotheses 1-8. Final report. Frankfort: Kentucky Child Welfare Research Association, Inc.

Asano, M. M. (1986). *A follow up study of children with Get Set day care and prekindergarten Head Start experience who enrolled in the school district of Philadelphia, fall, 1978 & 1980.* Philadelphia School District: Office of Planning, Research, and Evaluation.

Austin Independent School District. (1984). *Early childhood education--The best thing going in education?* (Publication No. 83.30). Austin, TX: Office of Research and Evaluation.

Beller, E. K. (1983). The Philadelphia study: The impact of preschool on intellectual and socioemotional development. In Consortium for Longitudinal Studies (Ed.), *As the twig is bent.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Berrueta-Clement, J. R., Schweinhart, L. J., Barnett, W. S., Epstein, A.S., & Weikart, D. P. (1984). *Changed lives: The effects of the Perry Preschool Program on youths through age 19.* Ypsilanti, MI: High/Scope Press.

Bossing, L., & Brien, P. (1980). *A review of the elementary school promotion/retention dilemma.* Murray, KY: Murray State University. (ERIC

Document Reproduction Service No. ED 212 362).

Brown, B. (1985). Head Start: How research changed public policy. *Young Children, 40* (5), 9-13.

Cannella, G. S., & Reiff, J. C. (1989). Mandating early childhood entrance/retention assessment: Practices in the United States. *Child Study Journal, 19* (2), 83-89.

Casto, G., & Mastropieri, M. A. (1986). The efficacy of early intervention programs: A meta-analysis. *Exceptional Children, 52* (5), 417-424.

Collins, R. C. (1984). *Head Start: A review of research with implications for practice in early childhood education.* Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984.)

Consortium for Longitudinal Studies. (1983). As the twig is bent: Lasting effects of preschool programs. In Corsortium for Longitudinal Studies (Ed.), *As the twig is bent.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Darlington, R. B., Royce, V. M., Snipper, A. S., Murray, A. W., & Lazar, I. (1980a). *Lasting effects after preschool.* Administraton for Children, Youth, and Familes (DHEW), Washington, DC: William and Flora Hewlet Foundation.

Darlington, R. B., Royce, V. M., Snipper, A. S., Murray, A. W., & Lazar, I. (1980b). Preschool programs and later school competence of children from low-income families. *Science, 208*, 202-204.

Doremus, V. P. (1986). Forcing works for flowers, but not for children.

Educational Leadership, 44, 32-35.

Dunn, L. M., & Dunn, L. M. (1981) *Peabody picture vocabulary test-revised.* Circle Pines, MN: American Guidance Service.

Edgar, E., Heggelund, M., & Fischer, M. (1988). A longitudinal study of graduates of special education preschools: Educational placement after preschool. *Topics in Early Childhood Special Education, 8* (3), 61-74.

Elkind, D. (1986). Formal education and early childhood education: An essential difference. *Phi Delta Kappan, 67*, 631-640.

Elkind, D. (1987). *Miseducation: Preschoolers at risk.* New York: Alfred A Knopf.

Evans, E. D., & Hillman, L. (1983). *Longitudinal follow-Up assessment of differential preschool experience for low-income minority group children.* (ERIC Document Reproduction Service No. ED 241 161)

Foundation for Human Service Studies. (1980). *Persistence of preschool effects: Status, stress and coping skills.* Year 2 Report, 1. Ithaca, NY: Foundation for Human Services.

Futrell, M. H. (1987). Public schools and four year olds: A teacher's view. *American Psychologist, 42*, 251-258.

Goodlad, J. I., Klein, M. F., & Novotney, J. M. (1973). *Early schooling in the United States.* New York: McGraw Hill.

Goudy, W. (1988, March). *Demographics of Iowa.* Report presented at the meeting of the Area XV Superintendents' Meeting, Des Moines, IA.

Gray, S.W., Ramsey, B.K., & Klaus, R.A. (1982). *From 3 to 20: The early training*

project. Baltimore: The University Park Press.

Grieves, T. S. (1986). *The status of early childhood education in the public schools of Iowa.* Unpublished doctoral dissertation, The University of Iowa, Iowa City.

Grubb, W. N. (1987). *Young children face the states: Issues and options for early childhood programs.* (No. RR-001). Center for Policy Research in Education: Rutgers, The State University of New Jersey.

Helmich, E. (1985). *The effectiveness of preschool for children from low-income families: A review of the literature.* Springfield: Illinois State Board of Education, Dept. of Planning, Research and Evaluation.

Herwig, J. E. (1987). *Iowa public school programs for 4-year-olds, 1985-87.* Ames: Iowa State University.

Hieronymus, A. D., & Hoover, H. D. (1986). *Manual for school administrators, Levels 5-14.* Chicago, IL: Riverside Publishing Company.

Hymes, J. (1987). Public school for four year olds. *Young Children, 42,* 51-52.

Iowa Association of School Boards. (1987). *Strategies for excellence.* Des Moines: Department of Education.

Iowa Commission on Children, Youth, and Families. (1987). *Child day care: A need for funding, 4.* Des Moines: Department of Education.

Iowa Department of Education (1980). *1980 census of population and housing by school districts.* Des Moines: Department of Education.

Iowa Department of Education. (1989). *The annual condition of education report: A report on elementary, secondary and community college*

education in Iowa. Des Moines: Department of Education.

Iowa Department of Education. (1992). *The annual condition of education report: A report on elementary, secondary and community college education in Iowa.* Des Moines: Department of Education.

Irvine, D. J., Flint, D. L., Hick, T. L., Horan, M. D., & Kukuk, S. E. (1980). *Continuity of learning experiences: A key to long-range effects of prekindergarten.* New York State Education Dept., Albany: New York State Education Dept., Division of Research.

Jensen, A. R. (1969). How much can we boost IQ and scholastic achievement? *Harvard Educational Review*, 1-23.

Johnson, V. M., & O'Fallon, O. K. (1975). *Clinch-Powell Educational Cooperative early childhood education program. evaluation report.* Knoxville: Tennessee University Bureau of Educational Research and Service.

Jones, M. M. (1988). *The longitudinal evaluation of early childhood education interim report: The half-day child development program for four-year-olds.* Columbia: South Carolina State Department of Education, Office of Research.

Kagan, S. L. (1985, December 11). Four-year-olds in the public schools. *Education Week* (pp. 1-8).

Kagan, S. L. (1987). Early schooling: On what grounds? in S. L. Kagan & E. F. Zigler (Eds.), *Early Schooling: The national debate* (pp. 3-26). New Haven: Yale University Press.

Karnes, M. B., Shwedel, A. M., & Williams, M. B. (1983). A comparison of five approaches for educating young children from low-income homes. In Consortium for Longitudinal Studies (Ed.), *As the twig is bent....*Lasting effects of preschool programs (pp. 133-170). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Karweit, N. L. (1989). Effective kindergarten programs and practices for students at risk of academic failure. In R. E. Slavin, N. L. Karweit, & N. A. Madden (Ed.), *Effective programs for students at risk.* Needham Heights, MA.: Allyn and Bacon.

Katz, L. G. (1987) Early education: What should young children be doing? in S. L. Kagan & E. F. Zigler (Eds.), *Early schooling: The national debate* (pp. 151-167). New Haven: Yale University Press.

Keyser, D. J., & Sweetland, R. C. (1987). *Test critiques, Volume VI.* Kansas City, MO: Westport Publishers.

Kutner, L. (1989, April 30). Preschool "fast track" may harm tots, experts warn. *Des Moines Register.* p. 5E.

Larsen, J. M., & Draper, T. W. (1984). *Does preschool help the educationally advantaged child?* Preliminary Findings from a Longitudinal Study. Paper presented at the 68th annual meeting of the American Educational Research Association, New Orleans, LA.

Lazar, I. (1983). Discussion and implications of the findings. In Consortium for Longitudinal Studies (Ed.), *As the twig is bent.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Lazar, I., Darlington, R. B., Murray, H., Royce, J., & Snipper, A. (1982). Lasting effects of early education: A report from the Consortium for Longitudinal Studies. *Monographs of the Society for Research in Child Development, 47* (2-3), (Serial No. 195).

Lazar, I., Hubbel, V. R., Murray, H., Rosche, M., & Royce, J. (1977). *The persistence of preschool effects: A long term follow-up of fourteen infant and preschool experiments.* Washington, DC: U.S. Department of Health and Human Services, Administration for Children, Youth, and Families.

Lichtenstein, R., & Ireton, H. (1984). *Preschool screening: Identifying young children with developmental and educational problems.* Orlando: Grune & Stratton.

Mann, A. J., Harrell, A., & Hurt, M., Jr. (1976). *A review of Head Start research since 1969.* Washington, DC: Social Research Group, George Washington University.

McKey, R., Condelli, L., Ganson, H., Barrett, B., McConkey, C., & Plantz, M. (1989). *The impact of Head Start on children, families, and communities.* Washington, DC: CSK, Inc.

McKinnon, J. (1982). *A comparative study of the effects of preschool education on middle class children.* Puce, Ontario: Lakeview Montessori School.

Meisels, S. J. (1987). Uses and abuses of developmental screening and school readiness testing. *Young Children, 42* (2), 4-6, 68-73.

Miller, L. B., & Bizzell, R. P. (1983a). Long-term effects of four preschool programs: Sixth, seventh, and eighth grades. *Child Development, 54* (3),

727-741.

Miller, L. B., & Bizzell, R. P. (1983b). The Louisville experiment. In Corsortium for Longitudinal Studies (Ed.), *As the twig is bent* (pp. 171-179). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Miller, L. B., & Bizzell, R. P. (1984). Long-term effects of four preschool programs: Ninth- and tenth-grade results. *Child Development, 55* (4), 1570-87.

Moore, S. G. (1978). Research in review: The Abt report of Follow Through: Critique and comment. *Young Children 33,* 52-56.

Morado, C. (1986). Prekindergarten programs for 4-year-olds: State involvement in preschool education. *Young Children, 41,* 69-71.

Nason, R. B. (1991). Retaining children: Is it the right decision? *Childhood Education, 67,*(5), 300-304.

National Association for the Education of Young Children. (1986). Position statement on developmentally appropriate practice in early childhood programs serving children from birth through age 8. In S. Bredekamp (Ed.), Developmentally appropriate practice in early childhood programs serving children from birth through age 8. Washington, DC: NAEYC.

Neill, M. D., & Medina, N. J. (1989). Standardized testing: Harmful to educational health. *Phi Delta Kappan, 70,* 688-697.

Paget, K. D., & Bracken, B. A (1983). *The psychoeducational assessment of preschool children.* New York: Grune & Stratton.

Parker, R. K. (1969). *The effectiveness of special programs for rural isolated*

four-year-old children. Final report. Tallahassee: Florida State University.

Peck, J. T., Mc Caig, G., & Sapp, M. E. (1988). *Kindergarten policies: What is best for children.* Research Monograph of the National Association for the Education of Young Children No. 2.

Philadelphia School District. Office of Research and Evaluation. (1982). *Highlights of early childhood program accomplishments.* Preliminary Reports: 1981-1982. Philadelphia School District: Office of Research and Evaluation.

Phillips, C. A. (1988). *Prekindergarten programs: Iowa's response.* Des Moines: Iowa Department of Education.

Pinkett, K. E. L. (1985). *Preschool attendance and type of experience in advantaged children: Long-term effects by third grade.* Marietta, GA: Kennesaw College.

Revicki, D., & Self, B. (1980). *The impact of preschool experience and the parent education follow through program on academic achievement*: A longitudinal study through grade 5. Chapel Hill: University of North Carolina Book Store.

Royce, J. M., Darlington, R. B., & Murray, H. W. (1983). Pooled analyses: Findings across studies. In Corsortium for Longitudinal Studies (Ed.), *As the twig is bent.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Salvia, J., & Ysseldyke, J. (1981). *Assessment in special and remedial education* (2nd ed.). Boston: Houghton Mifflin.

Sevigny, K. E. (1987). *Thirteen years after preschool--Is there a difference?*

Detroit, MI: Office of Instructional Improvement, Detroit Public Schools.

Shepard, L. A., & Smith, M. L. (1986). Synthesis of research on school readiness and kindergarten retention. *Educational Leadership, 44* (3), 78-86.

Slavin, R. E., Karweit, N. L., & Wasik, B. A. (1993). Preventing early school failure: What works? *Educational Leadership, 50* (4), 10-19.

Slavin, R. E., & Madden, N. A. (1989). What works for students at risk: A research synthesis. *Educational Leadership, 48,* (5).

Stallings, J. (1987). Longitudinal findings for early childhood program: Focus on direct instruction. *The Lippman Papers, Appropriate Programs for Four-Year-Olds.* (ERIC Document Reproduction Service No. ED 297 874).

Stanley, J. C. (1971). *Preschool programs for the disadvantaged: Five experimental approaches to early childhood education* (pp. 186-187). Baltimore: The Johns Hopkins University Press.

Tizard, B. , Hughes, M. , Carmichael, H., & Pinkerton, G. (1982). Adults' cognitive demands at home and at nursery school. *Journal of Child Psychology and Psychiatry, 24,* 269-281.

University of the State of New York. (1982). *Evaluation of New York state experimental prekindergarten program: Final report.* The State Education Department. Albany: Division of ESC Education Planning and Development.

Weber, C. U., Foster, D. , & Weikart, D. P. (1978). *An economic analysis of the Ypsilanti Perry Preschool Project.* Monograph No. 5. Ypsilanti, MI:

High/Scope Educational Research Foundation.

Weber, E. (1984). *Ideas influencing early childhood education.* New York: Teachers College Press.

Westinghouse Learning Corporation. (1969). *The impact of Head Start: An evaluation of the effects of Head Start on children's cognitive and affective development* (Executive Summary). Athens: Ohio University.

Zigler, E. F. (1987). Formal schools for four-year-olds? NOI *American Psychologist, 42,* 254-260.

APPENDIXES

APPENDIX A

Classroom Objectives*

Self-concept

Self-awareness

Awareness of others

Awareness of world around us

Language development

Basic concepts

Good nutrition and health (medical and dental)

Program objectives*

Individual educational programming is done for each child emphasizing the family unit, the living environment, and exploration of the language. Unit teaching in the areas of seasons, holidays, the family, health, and nature is completed each year. An integral part of the program is parental involvement through home visits and group discussions.

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*Classroom objectives and program objectives were taken from the district program handbook prepared for distribution to parents.

APPENDIX B

Preschool

Diagnosis of Needs - Preschool

At the beginning of the year, students are individually evaluated using the Chapter I Early Childhood checklist. On the basis of the individual results of this initial evaluation, activities are devised to help each child develop the skills outlined by the checklist. Parents are informed of the baseline data and informed throughout the year of the child's progress.

An individual Communication and Cognition checklist is prepared for each child. Included on this checklist are the areas of sensory training, identification and verbalization skills, number skills and relationships. As each task is introduced, a note is made of the date with further notations made when the task is mastered.

An individual developmental chart covering physical development, emotional development, social and intellectual development and health habits is kept for each child. Involved are abilities or implications and possible guidance techniques. This form is used for parent conferences.

Name

Social Behavior

Learning Independence

Self Expression, conversation, listening, paying attention

Discipline

Experiences available to your child and his major interests at this time

Your child's most immediate needs as I see them

Your child's most immediate needs as you see them

How can we work together to meet these needs?

COMMUNICATION AND COGNITION

	Date	
	Task	Task
	Introduction	Learned
A. Sensory Training		
1. Visual Discrimination		
a. Discriminate and match colors		
1. Selects blocks or beads of one color (with visual demonstration)		
2. Sorts crayons, blocks, beads, or other objects into different boxes according to color		
3. Matches one paper cutout (fish, heart, etc.) with identical form of the same color		
4. Matches objects in the environment with a specific colored object ("Find other things that are red.")		
5. Can discriminate all primary and secondary colors - also white and black		
b. Discriminate shapes		
1. Finds and matches common objects, i.e., "A pencil like this one." Other objects might be comb, chalk, stick, brush, scissors, etc.		
2. Selects objects to match ball and block shapes		
3. Selects matching familiar two-dimensional shapes (paper cutouts)		
4. Matches circle and square cutouts to corresponding outlines when confronted with both		
5. Matches triangle, oval, and diamond cutouts to corresponding outlines when confronted with all shapes		
c. Discriminate sizes		
1. Finds big block or ball when given choice of two similar objects with large disparity		
2. Selects little block or ball when given choice of two similar objects with large size disparity		
3. Selects small or large picture (animal or forms)		
4. Selects from groups of similar objects the smallest or largest one when not too great a size disparity exists		
5. Selects from groups of similar forms, designs, numbers, or letters the smallest one or largest one when not too great a size disparity exists		
2. Visual Memory		
a. Recognize familiar objects		
1. Selects own coat, hat, boots, and gloves from those of the entire class		
2. Selects own shoes and other personal possessions from those of the entire class		
3. Recognizes when classroom objects are misplaced or moved to a new position		

	Date	
	Task Introduction	Task Learned
b. Identifies missing parts		
1. Finds missing object when one is taken away from a set of two		
2. Finds missing object when one is taken away from a set of three		
3. Names missing part on picture of familiar object		
3. Visual Sequence		
a. Arrange objects in sequence		
1. Strings beads or places pegs in pegboard alternating two colors		
2. Completes activity in more difficult pattern, i.e., orange, blue, yellow, green		
3. Arranges toys and other objects in sequential patterns		
4. Lines up colors or shapes according to formerly presented sequence		
b. Arrange story pictures in sequence		
1. Arranges two-story pictures in sequence		
2. Arranges three-story pictures in sequence		
3. Arranges four-story pictures in sequence		
4. Auditory Discrimination		
a. Listen and respond to sounds and the spoken word		
1. Responds to own name by gesture, smile, or speech		
2. Follows simple command like "stop" or "walk"		
3. Can duplicate noise (made by teacher) - hard clap, whistle, striking block with hammer, crumpling paper, etc.		
4. Can duplicate noise made by teacher when back is turned		
5. Holds hands high for high notes, squats low for low notes when heard on piano or other instrument		
6. Selects own voice from tape from several other voices (by raised hand)		
7. Responds appropriately to various types of music (march, lullaby, rock)		
5. Auditory Memory		
a. Retain and recall some auditorially-presented information		
1. Responds by gesture or speech to comments		
2. Recalls and pantomimes simple previously-presented stories or action songs		

	Date	
	Task Introduction	Task Learned
6. Auditory Sequence		
a. Recall in correct sequence prior auditorially presented information		
1. Follows specific directions given two at a time		
2. Follows three commands sequentially		
3. Follows four sequential commands		
4. Repeats simple rhythm patterns made by teacher		
7. Tactile Discrimination		
a. Discriminate shapes		
1. From touch, identifies or matches familiar objects (pencil, eraser, shoe, etc.)		
2. From touch, identifies or matches cubes, ball, cylinders, etc.		
b. Discriminate size differences		
1. Selects big or little object by touch		
c. Identify differences in texture, etc.		
1. Selects wet and dry objects		
2. Identifies hot and cold objects		
3. Discriminates between hard and soft texture		
4. Selects smooth and rough surfaces		
5. Identifies heavy and light objects		
B. Language		
1. Identification and Verbalization Skills		
a. Identify self and others		
1. Answers to own name when called		
2. Says own name pointing to self when asked "What is your name?" or "Who are you?"		
3. Says own name looking in mirror		
4. Says names of teacher and aide		
5. Says names of classmates		
b. Verbalize spontaneously		
1. Uses single word response		
2. Identifies people by naming - pointing		
3. Uses exclamations		
4. Uses simple greetings		
5. Identifies objects by name		
6. Combines 2 and 3 words meaningfuly		
7. Uses simple descriptive words correctly		
8. Uses pronouns appropriately		
9. Expresses personal needs appropriately		
10. Uses sentences		
11. Asks questions		
12. Participates in show and tell experiences		

	Date	
	Task Introduction	Task Learned
c. Identify common objects by name		
1. Common items of food		
2. Common items of clothing		
3. Furniture and equipment we find in the:		
schoolroom		
kitchen		
living room		
bedroom		
bathroom		
garage		
yard		
4. Things we play with that:		
bounce		
roll		
fly		
turn on and off		
make noise		
5. Kinds of transportation		
6. Kinds of houses and buildings		
d. Respond to specific language activities (if available)		
1. Peabody Language Developmental Activities		
2. Distar Language Program		
3. Tape recorder		
4. Music		
5. Filmstrips		
6. Records		
7. Stories		
8. Flannel board		
2. Specific Verbalization Skills		
a. Make initial letter sounds appropriately on known words or in isolation		
1. B		
2. D		
3. F		
4. G (hard)		
5. H		
6. J		
7. K		
8. L		
9. M		
10. N		
11. P		
12. R		

	Date	
	Task Introduction	Task Learned
13. S		
14. T		
15. V		
16. W		
17. Y		
18. Z		
19. CH		
20. TH		
21. SH		
22. WH		
23. A		
24. E		
25. I		
26. O		
27. U		
b. Recite appropriate personal information		
1. Name ("What is your name?")		
2. Age ("How old are you?")		
3. Town ("Where do you live?")		
c. Identify and name body parts		
1. Body		
2. Head		
3. Hair		
4. Eyes		
5. Nose		
6. Mouth		
7. Ears		
8. Chin		
9. Cheek		
10. Elbow		
11. Hip		
12. Knee		
13. Foot		
14. Nails		
15. Teeth		
16. Tongue		
17. Eyebrows		
18. Eyelashes		
19. Neck		
20. Arms		
21. Hands		
22. Fingers		
23. Thumb		

	Date	
	Task Introduction	Task Learned
24. Back		
25. Leg		
26. Ankle		
27. Toes		
28. Shoulders		
29. Wrist		
30. Stomach		
d. Identify and name colors		
1. Red		
2. Blue		
3. Green		
4. Yellow		
5. Orange		
6. Brown		
7. Purple		
8. Black		
9. White		
10. Pink		
e. Identify and name shapes		
1. Circle		
2. Square		
3. Triangle		
f. Demonstrate meaning related to space		
1. Up-down		
2. On-off		
3. Top-bottom		
4. High-low		
5. Above-beneath		
6. Forward-back		
7. First-last		
8. In-out		
9. Open-shut		
10. Left-right		
11. Under-over		
12. Behind-ahead		
13. Beginning-end		
g. Make comparisons of degree		
1. Big-little		
2. Hard-soft		
3. Full-empty		
4. Sweet-sour		
5. New-old		
6. Sunshine-rain		

	Date	
	Task Introduction	Task Learned
7. Dark-light		
8. High-low		
9. Short-long		
10. Hot-cold		
11. Wet-dry		
12. Clean-dirty		
13. Day-night		
14. Warm-cool		
15. On-off		
16. Fast-slow		
h. Identify and name domestic and farm animals		
1. Puppy-dog		
2. Pig-hog		
3. Hen		
4. Calf-cow		
5. Pony		
6. Goat		
7. Rabbit		
8. Turtle		
9. Bird		
10. Bee		
11. Fish		
12. Frog		
13. Butterfly		
14. Kitten-cat		
15. Chick-chicken		
16. Rooster		
17. Colt-horse		
18. Lamb-sheep		
19. Turkey		
20. Mouse		
21. Fly		
22. Owl		
23. Bug		
24. Duck		
25. Goose		
i. Identify and name forest and zoo animals		
1. Monkey		
2. Elephant		
3. Giraffe		
4. Kangaroo		
5. Hippo		
6. Penguin		

	Date	
	Task Introduction	Task Learned
7. Alligator		
8. Seal		
9. Skunk		
10. Deer		
11. Bear		
12. Lion		
13. Zebra		
14. Buffalo		
15. Camel		
16. Rhino		
17. Snake		
18. Raccoon		
19. Squirrel		
20. Fox		
C. Number Skills		
1. Understands simple quantitative terminology		
a. Yes-no		
b. Little-big		
c. Long-short		
d. Some-none		
e. Empty-full		
f. More-less		
g. Few-many		
h. Cupful		
i. Glassful		
j. All		
k. Whole		
l. Half		
2. Identify quantities one to three		
a. Matches different objects according to numbers (1-3)		
b. Chooses objects on command from 1-3		
c. Expresses correct number of objects in response to the question of "How many?" (1-3)		
d. Expresses correct number of raps on a drum (1-3)		
e. Traces around numbers 1-3		
3. Identify quantities one to ten		
a. Matev â £A8I∑â.˜‡o¸"˜Fſù according to numbers (1-10)		
b. Chooses objects on command from 1-10		
c. Expresses correct number of objects in response to the question of "How many?" (1-10)		
d. Expresses correct number of raps on a drum (1-10)		
e. Traces numbers 1-10		

4. Recognize time of day
   a. Distinguishes between night and day
   b. Associates morning and afternoon with meals and school activities
   c. Puts three or four pictures in a story in correct time sequence
   d. Tells own activities sequentially
   e. Learns concepts involving these words:
      1. early
      2. late
      3. now
      4. later
      5. wait
   f. Identifies clocks and watches

Date	
Task Introduction	Task Learned

DEVELOPMENTAL CHART

NAME	AGE	DATE
ASPECT OF DEVELOPMENT	ABILITIES OR IMPLICATIONS	GUIDANCE
PHYSICAL motor coordination active/inactive		
EMOTIONAL fears anger jealousy love		
SOCIAL DEVELOPMENT Mother-child Father-child Staff-child Siblings Peers Group		
INTELLECTUAL language listening attention span		
HEALTH HABITS eating elimination sleep and rest		
EXERCISE		

TITLE 1 EARLY CHILDHOOD CHECKLIST

This checklist is designed to keep an accurate up-to-date record of the child's progress during the year. When the child can successfully complete a task, the teacher will mark the appropriate square on the checklist. The teacher will then share the results of the checklist with the parents periodically throughout the year.

I. SELF-AWARENESS	OCT.	JAN.	MAY
Knows name:			
Full name			
First name only			
Can recognize his name when he sees it			
Knows address:			
House number			
Street			
Town			
State			
Knows telephone number:			
Exchange			
Digits			
Knows birthdate:			
Month			
Day			
Year			
Sex:			

	OCT.	JAN.	MAY
Recognizes family members:			
Knows names of members of family:			
Recognizes own property and work:			
Knows body parts by pointing to the named part:			
Eyes			
Eyebrows			
Eyelashes			
Nose			
Ears			
Mouth			
Lips			
Tongue			
Teeth			
Head			
Hair			
Neck			
Shoulders			
Arms			
Elbow			
Wrist			
Hands			
Left			

	OCT.	JAN.	MAY
Right			
Fingers			
Thumb			
Waist			
Chest			
Back			
Hips			
Stomach			
Legs			
Knees			
Feet			
Ankles			
Toes			
II. GENERAL			
Attends to personal needs:			
Uses toilet facilities properly			
Covers mouth when coughs			
Proper use of Kleenex or handkerchief			
Washes and dries hands properly			
Puts on outer clothing			
Takes off outer clothing			
Puts outer clothing in its identified place(hangs up)			

	OCT.	JAN.	MAY
Ties shoes			
Unties shoes			
Buttons			
Unbuttons			
Snaps			
Unsnaps			
Zips			
Unzips			
Efficiently cleans up eating area after finishing snack (as part of routine)			
Cleans up own spills:			
In eating area			
In work area			
Manages materials adequately			
Puts away materials after using them			
Takes care of classroom materials			
Handles sharp objects safely when using or transferring from one place to another			
Plays safely when playing with materials			
Uses variety of materials			
III. LANGUAGE DEVELOPMENT			
Communicates his needs and wants verbally			
Describes an object			
Retells stories in correct sequence			

	OCT.	JAN.	MAY
Identify common sounds			
Discriminates between sounds			
Answers questions verbally			
IV. EMOTIONAL BEHAVIOR			
Controls his actions to be appropriate in the situation			
Independent			
Displays confidence in willing to attend to a variety of tasks			
Understands others and their feelings			
Recognizes his feelings			
Accepts his feelings			
Accepts success and failure			
Projects a secure, positive self-image			
V. MOTOR COORDINATION			
Crawl to marked position (20 ft.)			
Walk:			
Forwards			
Backwards			
Sideways			
Downstairs			
Run to marked position			
Skip to marked position			
Hop:			

	OCT.	JAN.	MAY
Right foot			
Left foot			
Balance:			
Right foot			
Left foot			
Toes			
Landing on both feet simultaneously			
Bounces ball:			
Right hand			
Left hand			
Catches ball which is:			
Rolled			
Bounced			
Tossed			
Throws beanbag underhanded			
Strings beads			
VI. WORK HABITS AND ATTITUDES			
Listens and follows directions			
Listens to others			
Shares information			
Develops positive attitude towards school and others			
Cooperates with others when the situation requires it			

	OCT.	JAN.	MAY
Demonstrates an attention span which allows him to complete a variety of tasks			
Complies with school regulations and rules			
Gives correct non-verbal responses to verbal requests and instructions			
Uses indoor/outdoor voice at appropriate times			
Does work independently			
VII. SOCIALIZATION			
Interacts with non-familiar adults			
Takes turns			
Plays with peers			
Shares play things with peers			
Participate in individual activities			
Participate in group activities			
Accepts group responsibility			
Accepts individual responsibility by taking part in:			
Games			
Fingerplays			
Singing			
Discussions			
Stories, role-playing (dramatization)			
Works cooperatively with others			
Respect others' property			
Respects others' opinions			

	OCT.	JAN.	MAY
Respects others' feelings			
VIII. COGNITIVE			
Identify objects by:			
Sight			
Smell			
Taste			
Touch			
Sound			
Name colors:			
Red			
Yellow			
Blue			
Green			
Brown			
Black			
White			
Purple			
Orange			
Name shapes:			
Circle			
Square			
Rectangle			

	OCT.	JAN.	MAY
Triangle			
Star			
Crescent			
Heart			
Ellipse			
Names sizes:			
Small			
Middle-sized			
Large			
Puts sizes in order			
Identify and reproduce patterns			
Recognize and names opposite qualities (long, short - hot, cold - etc.)			
Has acquired skills of:			
Observation			
Investigation			
Critical thinking			
Creative thinking			
Curiosity			
Sorts objects into proper groups (shapes, colors, sizes)			
Select matching objects and pictures			
Identify spatial relationship:			
Empty			

	OCT.	JAN.	MAY
Full			
More			
Less			
Day			
Night			
Living			
Non-living			
Over			
Under			
Around			
Inside			
Outside			
On			
Off			
Up			
Down			
Between			
Above			
Below			
Knows concept of:			
Solids			
Liquids			

	OCT.	JAN.	MAY
Gases			
Name seasons of year:			
Fall			
Winter			
Spring			
Summer			
Name days of week:			
Sunday			
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
IX. HEALTH, SAFETY AND NUTRITION			
Demonstrates knowledge of correct safety procedures and rules			
Participates in cooking activities			
Is willing to taste new foods			
Displays an awareness of the need for:			
Daily personal cleanliness			
Proper dress			

	OCT.	JAN.	MAY
Proper nutrition			
Adequate exercise			
Adequate sleep			
X. MATH			
Compare two weights			
Count out number of objects indicated (0-10)			
Count objects 0-10 and pair with appropriate written numeral			
Select the stated numberal from numeral cards in random order			
Rote count to 20			
Identify coins:			
Penny			
Nickel			
Dime			
Quarter			
Puts the numerals 0-10 in correct sequential order			
Match a set of objects one-to-one with another set of objects:			
One set			
Five sets			
Ten sets			
Understands concept of:			
Half			
Whole			

XI. READING READINESS	OCT.	JAN.	MAY
Demonstrates the ability to discrimiate auditorily			
Demonstrates the ability to discriminate visually			
Demonstrates auditory memory			
Demonstrates auditory-visual memory			
Recognizes letters and sound relationship:			

Sound		Jan.	May
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			

Letter		Jan.	May
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			

Letter		Jan.	May
a			
b			
c			
d			
e			
f			
g			
h			
i			
j			
k			
l			
m			
n			
o			
p			
q			
r			
s			
t			
u			
v			
w			
x			
y			
z			

	OCT.	JAN.	MAY
XII. ART			
Is willing to experiment with new and different media			
Has a positive attitude toward art and his own ability to create			
Manipulates art materials properly:			
Crayons			
Paint brushes			
Paints			
Scissors			
Pencils			
Chalk			
Cares for art materials properly			
XIII. MUSIC			
Participates in music activities:			
Dancing			
Singing			
Play instruments			
Demonstrates the ability to hear and copy a definite rhythm pattern or song			

* Preschool (Chapter I Early Childhood checklist) taken from the district's preschool curriculum files.